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A Clinical Lecture
ON
RENAL DROPSY.

DELIVERED AT THE ADDENBROOKE'S HOSPITAL IN AUGUST, 1918.

BY

SIR T. CLIFFORD ALLBUTT, K.C.B., F.R.S.,

REGIUS PROFESSOR OF PHYSIC IN THE UNIVERSITY OF CAMBRIDGE.

[THE first part of the lecture consisted in the diagnosis of the case as one of Chronic Parenchymatous Nephritis, and in the discrimination of this from other diseases of the kidney, illustrated by pathological specimens: this part is omitted.]

On March 7th, 1918, was admitted L. G. H., aged 19, complaining of swollen legs and body, dating back to the previous August; also of dyspnoea, nausea, and vomiting—he vomited last the morning before. Nothing in the previous history worth recording, except the absence of any recognized infection, and a positive story of several severe wettings and chills before he fell ill. He presented the usual aspect of renal dropsy: face puffy and pallid; attitude propped up in bed; some cough and shortness of breath; body and legs enormously swollen—face, back, loins, legs, and private parts—and pitting deeply on pressure everywhere. Heart probably large and dilated; some crepitations in the backs of the lungs. Systolic pressure about 140. As pink spots with some dew upon them had appeared on the legs it was decided to tap the legs at once. After careful disinfection and greasing of the skin Southey's trocars were introduced into both legs and during the next three days about 45 pints of water drained off, with great relief; the penis and scrotum also were punctured and drained. No local irritation of importance followed these measures. The urine contained much albumin, and "many granular casts were seen under the microscope." The quantity was deficient. Vomiting recurred occasionally.

This phase of the illness lasted till May 11th. Medicinal means of reducing the dropsy had failed. A free flow of urine had been obtained by various gentle diuretics, for many days reaching some 45 to 50 oz. in twenty-four hours. Diaphoretics, including hot air baths, laxatives, and the rest of the ordinary means, were tried in vain; the dropsy reaccumulated to the fullest extent after each tapping, although at four or five operations large quantities of water had been successfully drawn off.

At the bedside, Gentlemen, I impressed upon you, and now I repeat, that this huge anasarca is not, as generally supposed, a mere mechanical overflow of water into the subcutaneous tissues because of an obstructed filtration from the kidneys. At first this obstruction had perhaps something to do with the condition, but by a little management, and by means of sundry diuretics, we found no great difficulty in bringing about quite a good urinary flow. Moreover, as you have seen, we were able to supplement any defective renal filtration by large discharges of water in other directions. You will remember that, out of the patient's hearing, I had led you to form no great expectations of success by these means, for the secret of relief did not lie there. For the most part we were expelling plenty of water from the patient's system; yet the enormous dropsy continued as bad as ever, and after each tapping returned in all its volume within a few days. On the other hand, I told you that in cases of anuria of eight or ten days' duration no oedema appears. I argued that the fault lay in some abnormal holding up of the water by the tissues, probably by some physical, or chemico-physical perversion. We speculated on osmotic relations (Starling), on acidosis (Fischer), on various perverse affinities, on surface tensions, and we tried methods calculated to check such aberrations, attempts in which we had the valuable co-operation of Mr. Sydney Cole of our biochemical laboratory. The saltless diet was tried; the patient's system was alkalized for a time, a Blaud's pill was given with each meal; but all in vain.

Happily one morning I received a paper from Dr. Epstein of New York, whom I had met at the Sinai Hospital some years ago, and who had since kindly sent to me his papers, which chanced to be on the very subject of the causation and alleviation of dropsy in chronic parenchymatous nephritis.[1] From what I thus learned of Dr. Epstein's researches I determined at once to make a great change in the diet of the patient. Many of you know that I have not been in the habit of strictly reducing the protein diet in these cases, but rather of allowing such protein diet as the patient seems to require, remembering that these patients are always anaemic, and under the anasarca always emaciated. But Dr. Epstein's diet had gone far beyond any liberty I had taken. It was as follows: Lean meat, lean ham, whites of eggs, (oysters), (jelly, lentils, split peas), green peas, rice, (oatmeal), skimmed milk, (coffee), and tea; salt in moderation, and fluid as reasonably desired. We allowed also fish, an ounce of bread, and half a pint of unskimmed milk. The articles in brackets we omitted.

Unfortunately the patient had hardly begun the new diet when he was attacked by something like influenza; the throat was sore, the head ached, and the temperature rose—an additional burden which almost made an end of him. All through June he was very ill. However he weathered this storm, and the diet was pressed on again. Fortunately it was acceptable to the patient. During July his progress was remarkable; by July 24th a steady fall of the anasarca had been recorded, and on that day it was noted that the swelling of the legs and thighs was less than it had been at any time since admission; less, indeed, than after the tappings, although the catarrhal attack was not quite over and a cough and muco-purulent spitting still distressed him. On July 27th he had been up on a couch and was feeling much better than he had been since his illness began. August 2nd: "Legs practically free from oedema; general condition good. He passes up to 90 and 100 oz. of urine a day, which however is still very albuminous." On September 10th he was still on the Epstein diet, with excellent result. "He is not now passing an excessive quantity of urine, but there is no sign of dropsical fluid anywhere in the body." A cursory examination of a drop of the urinary deposit which I placed under the microscope showed nothing important save one epithelial cell (renal). On September 28th he received his discharge; not of course as cured, but as entirely relieved of his burden.

And now, Gentlemen, with Dr. Epstein's help, I will try to explain to you the reason of the method which in this case—a severe one of its kind—has proved so successful.

First of all, you must understand that I am speaking only of chronic parenchymatous nephritis, and that what I have to say about this disease does not apply directly to any other disease of the kidney—not, for example, to the primary contracted kidney. This being understood, we will turn to our dietetic treatment—from Galenism to biophysics. You have seen that the successful diet was high in protein value, low in fats and carbohydrates, being thus the contrary of the ordinary diet in this disease. Yet it seems to have been brilliantly successful. How? You have seen also that in this case the dropsy was not due to deficient flow through the kidney. Again, as to the salt retention, while admitting that this is probably important, we remark that salt retention is found also in renal diseases in which there is no dropsy, or but little. Now in his researches Dr. Epstein has found that, in the disease before us, the blood is very poor in proteins; moreover, that of these the globulins are in great excess, sometimes in extreme instances making almost all of the protein volume.*

It seems highly probable that this poverty of the blood in proteins is due to the very large losses of albumin by the urine which are characteristic of this particular disease, and that this impoverishment of the blood is proportionate to the degree of the albuminous discharge. For instance, such a patient may thus lose 25 grams a day, or more, of albumin, while the average total content of the blood is but 210 grams. It may be replied that the poverty is but apparent and due to the aqueous dilution (hydraemia), but this source of error has been controlled. What then must be the effect on osmotic pressure of this impoverishment of the colloid content of the blood? Professor Starling has calculated that the normal osmotic pressure of the blood is about 4 mm. Hg per 1 per cent. protein, and thus the passage

* I have tried to ascertain the normal proportion, but failed. At last I find in Luciani that the relative proportions of serum and globulin are difficult to determine, and in fact have not yet been determined.

of saline water is, of course, from the tissues to the blood vessels. Should the protein or colloid content of the blood fall sufficiently, the drift may well turn the other way; and the tissues attract the water and hold it. Accordingly, if we analyse the dropsical fluid, we shall find it to be little more than this saline water, its protein content being practically *nil;* the tissues, indeed, may become stronger in colloid content than the vessels, and the osmotic relations be quite upset. If, for control, we take a dropsical effusion from a case of primary contracted kidney, or of cirrhosis of the liver, we shall find it to contain as much as, or more than, three parts of protein per 100 c.cm. (Epstein). You see then how idle it is under these conditions to rely on expelling the dropsy by diuretics, diaphoretics, and the like; we can expel but the surplus after the tissues have saturated themselves.

In the next place, Dr. Epstein discovers a great excess of lipoid in the blood of these cases. This he attributes in great part to starvation; and if derived largely from mobilization of fat, it is also a product of breaking down of the tissues. Now abstraction of lipoids from tissue cells causes imbibition of fluid with consequent swelling of the cells—cell oedema.† The diet for this dropsy is therefore largely exclusive of fat.

Once more: I need not remind you that one main product of carbohydrate food is water; we may fear therefore that large amounts of such food may promote the accumulation of water in the system. Moreover we desire to make room rather for the protein constituents, and to secure their full assimilation without rivalry.

These, then, are Dr. Epstein's principles, which, you will admit, seem reasonable, and are based upon careful research. Further experience only can establish or invalidate his conclusions. So far as our one case goes you have seen that the results—we are tempted to say the consequences—were very striking. In conclusion I have to acknowledge the able assistance of our house-physician, Mr. Gittens, in the management of the case.

To bacteriology, Gentlemen, we owe indeed an unspeakable debt; but you have heard me say again and again that, this territory being largely won, we have now to look for the next great conquests to biochemistry and physical chemistry. But these and such advances demand a very different system of clinical investigation from that we now have in England; experience is good, sagacity is good, but now we have penetrated so far that chairs of clinical research, armed with skilled staffs and laboratories, must be established in tardy England as already they are provided in every considerable medical school in Scotland and on the European and American continents.

REFERENCE.
[1] A. A. Epstein: *Amer. Journ. Med. Sci.*, November, 1917; and *Journ. Amer. Med. Assoc.*, August 11th, 1917.

† On the harm which cholesterin may do to the body see Dr. Epstein (loc. cit.), and my *Diseases of Arteries*.

ACUTE ULCERATIVE GINGIVITIS.

BY
CAPTAIN CLAUDE G. COLYER, M.R.C.S., L.R.C.P.,
L.D.S.ENG., R.A.M.C.,
ADVISORY DENTAL SURGEON, —— ARMY.

DURING the past year or two a number of observers have written on the subject of acute ulcerative gingivitis. Little attention has, however, been paid to the signs on which an early diagnosis can be made, while no facts have been available regarding the extent to which the disease is prevalent among our armies in France. With regard to treatment, chief emphasis has hitherto been laid on the local use of drugs having a more or less specific action on the organisms found in this condition.

In the present paper, which is a modification of a report drawn up at the request of certain army medical authorities, special attention has been given to the methods of early diagnosis and the incidence rate in troops in France. The treatment has been dealt with on more general surgical lines than in previous communications, less reliance being placed on the action of anti-spirochaetal drugs, and more on thorough surgical cleansing of the infected areas. This method of treatment has been adopted as the result of personal experiences dating from March, 1915, when I saw for the first time cases in France. (In passing, it is interesting to note that between November, 1914, and March, 1915, no cases came under my notice. Since March, 1915, numerous cases of the disease, in all stages, have come under my personal care.

Signs and Symptoms.

Acute ulcerative gingivitis is an acute inflammatory condition of the margins of the gums, which spreads rapidly, and leads to sloughing of the interdental papillæ; sloughing of the gums around the necks of the teeth; ulceration of the adjacent mucous membranes (in the more severe cases); rarefying osteitis and destruction of the bone around the teeth, in chronic cases.

The general symptoms are as follows: Malaise; slight elevation of temperature, rarely over 100° F., but occasionally 102° F.; glandular swelling, the submaxillary glands being chiefly affected; general depression.

The local symptoms are: Haemorrhage from the gums, either spontaneous, or as a result of pressure; pain in the gums, especially at night, and often so severe as to make sleep impossible; a foul taste; very offensive breath; mastication difficult and extremely painful, the teeth becoming very tender and loose.

Clinical History.—The onset is gradual. A small area of gum becomes painful, and this pain spreads to the interdental papillae of the adjacent teeth. By the seventh to the tenth day the pain and local symptoms are severe, and the patient may report sick.

Local Signs.—In the earlier stages the only signs are a slight oedema of the interdental papillae; these rapidly become congested and are bluish-red in colour, and are distinctly swollen; if touched they bleed readily. Later the gums appear to be separated from the teeth, this being due to the swelling and not to any destruction of the periodontal membrane. This stage is generally present for two or three days. An acute necrosis of the papillae then follows. The slough formed is non-adherent, of a characteristic brownish colour, and very friable. There is no attempt at formation of a true membrane until the process of healing has commenced. If left untreated, sloughing gradually spreads until a considerable area of gum is destroyed. The gums in the infected region are deeply congested. The teeth are usually loose.

Distribution of the Lesion.—The gums around the upper incisor teeth are commonly affected first, but in a number of cases the disease commences in other situations; an erupting lower third molar, for instance, is a common site, or any spot where food tends to lodge. When one jaw is affected, the other soon shows signs of infection in the corresponding situation. The spread is usually in direct continuity along the gum, the interdental papillae on either side of the primary lesion becoming attacked. It is rare for a large area of gum to slough before several teeth have become implicated. Occasionally, on the other hand, the lesion begins at distinct points.

Pathology and Bacteriology.

In the early stages the tissues attacked by the specific organisms become deeply congested, and after two or three days necrose, making a series of cup-shaped depressions between the teeth. The sloughing does not extend deeper than the bottom of the peridental sulcus. At first there is little or no bone destruction, although this is to be found in advanced or chronic cases. Tartar is always present on the necks of the teeth exposed by the sloughing of the gum.

[*Note.*—In periodontal disease (pyorrhoea alveolaris), which is the disease most commonly mistaken for acute ulcerative gingivitis, the gums become slightly congested, but *do not slough*. Ulceration proceeds at the bottom of the peridental sulcus, thus destroying the periodontal membrane. This is accompanied by a rarefying osteitis, which finally leads to the destruction of the bony tooth socket. The gum is not destroyed as quickly as the periodontal membrane, and so a pocket of varying depth is formed between the tooth and the gum. In severe cases this pocket is filled with pus. Periodontal disease is extremely chronic, and in contrast to acute ulcerative gingivitis, may be present for ten or fifteen years.]

The characteristic organisms found in films are a mixture of *Bacillus fusiformis* and spirilla. In well-marked cases, especially when occurring in a clean mouth, these may appear to be present in almost pure culture, giving a very striking picture under the microscope. In other instances where periodontal disease or simple gingivitis is present

in addition, or when the condition has become chronic, a large variety of other organisms may be found as well.

It may be noted that acute ulcerative gingivitis and Vincent's angina of the throat are obviously one and the same disease, the only difference being the part of the buccal cavity affected. When the throat condition is primary, there are frequently multiple lesions on the gums, which eventually coalesce. The ulceration may begin and disappear in the throat before the gums are affected, and vice versa. On the other hand, only the throat or only the gums may be found involved in any one patient.

Incidence and Sources of Infection.

Cases are to be found in all branches of the service, and in all ranks. The condition is also found among the French civilian population, and in certain allied troops who have come under observation (for example, Portuguese). It is noticeable that officers form a large number of the cases treated, but this is most probably due to advice being sought sooner. Men in the trenches, or those living under bad conditions, are only slightly more liable to infection than those under more favourable circumstances. The condition is more prevalent during the winter than in the summer months.

Up to the present I have not been able to trace any definite methods of infection. In France, at least, the disease does not appear to spread by close proximity, for example, in huts and billets. Two cases have come under my notice in which the patients had been attached to "gas schools," and had tested box respirators belonging to other men; in these two instances the gums around the incisor teeth were infected first.

Excessive smoking, in my opinion, predisposes to the condition, and considerably retards the process of healing. The absence of fresh food does not seem to play any part in the causation. Officers and men who are able to obtain fresh vegetables are frequently victims.

Duration.—If untreated the condition becomes chronic, and results within a year or eighteen months in the destruction of the bony sockets of the teeth; when this occurs the teeth must necessarily be extracted before a cure can be effected. If treated by mouth-washes only, although the severity is diminished, the condition is not cured. If treated vigorously all symptoms disappear in three or four days, although a cure is not effected until about the tenth day of treatment; even after this period films may still show the presence of the causative organisms. Men should not be allowed to escape from treatment until three or four days have elapsed after all signs of ulceration have disappeared. Working on this principle I have had very few relapses. Recurrences are reported to be frequent, but the majority of such cases have been discharged before all ulceration of the gums has been completely healed. Careful use of a toothbrush and the employment of an astringent application to the gums for two or three weeks as an after-treatment will tend to decrease these recurrences.

Diagnosis.

In the earlier stages diagnosis may be difficult, except to a person with experience. Suspicion may be aroused by a slight swelling and reddening of an isolated interdental papilla, the surface of which appears to be stretched and glossy and the edges thinned out and transparent. The apex of the papilla may actually have sloughed. At this stage a microscopical examination should be made to establish the diagnosis. In the later stages the characteristic bluish-red gum, covered by slough, the offensive breath, and the glandular enlargement make the diagnosis easy.

The differential diagnosis is as follows:

1. From simple gingivitis. In simple gingivitis the gums are a bright red colour near the margin, the interdental papillae not being especially affected, while the gums gradually become normal as the buccal sulcus is approached. The interdental papillae are swollen, but not painful, and do not show any signs of sloughing. The gums are usually covered with food débris or tartar; this can be removed without causing pain or haemorrhage. The characteristic odour of the ulcerative type is absent, and there is neither pain at night nor glandular swelling.

2. From periodontal disease (pyorrhoea alveolaris). In this condition there is no sloughing, and little obvious inflammation of the gums. Pus can usually be squeezed out from the pockets which surround the teeth. These pockets are caused by the destruction of the periodontal membrane. After some years considerable destruction of gum ensues, but this destruction is slow, and is not brought about by visible ulceration.

3. From ulcerative stomatitis. This condition, although frequently showing similar organisms on microscopical examination, and occasionally associated with ulcerative gingivitis, is not limited to the gum margins. It does not lead to so much destruction of tissue. Small ulcers are usually to be found on the palate, tongue, and buccal mucous membrane.

4. From syphilis. Mucous patches may be mistaken for ulcerative gingivitis, and reliance must be placed on a history of the case for a diagnosis. Secondary ulcers and the punched-out ulcers of tertiary syphilis are most often confused with Vincent's angina of the tonsils and fauces. The ulceration, however, in these cases may spread out along the gums. Slides from such ulcers do not give the characteristic flora, and the ordinary treatment for ulcerative gingivitis will fail. A Wassermann reaction will clinch the diagnosis under such circumstances.

5. From mercurial stomatitis, scurvy, etc. Negative bacteriological findings, coupled with the history of the case, must be relied on.

Treatment.

This may be divided into an account of the general lines of treatment commonly adopted in this disease and an account of the methods advocated by myself.

The commonest local forms of treatment in use are:

1. Swabbing of the gums with Bowman's or other similar solutions. These solutions contain, for the most part, mixtures of vinum ipecacuanhae, liquor arsenicalis, and glycerin, or solutions of silver nitrate or copper sulphate.

2. Mouth-washes, usually associated with the above treatment, generally given every four hours, and composed of hydrogen peroxide, eusol, carbolic acid, etc.

3. Scaling of the teeth and removal of tartar, as soon as all signs of sloughing have disappeared.

The treatment I have adopted, as a result of considerable experience, is briefly as follows:

General Treatment.—Patients are admitted to hospital. Diet is light for the first two days, but ordinary hospital diet is substituted as soon as possible. Smoking is forbidden.

Local Treatment.—When the patient is first seen all slough is scraped away. This is best done with a large, spoon-shaped excavator. The remaining débris is then washed away by means of a water syringe, great care being taken to syringe *between* the teeth. A concentrated solution of thymol in water is the best lotion for this purpose, but if not available eusol may be used instead. When all the slough has been removed from the ulcers as much tartar as possible is scaled from the necks of the teeth. The haemorrhage caused by the above process is not harmful, although care should be taken that the tissues are damaged as little as possible. The gums are then dried and swabbed with a 5 per cent. solution of silver nitrate; this is allowed to remain for a minute or two and the patient instructed to wash out his mouth with water or thymol solution.

Subsequent Treatment.—A mouth-wash of thymol water is given two-hourly throughout the day. The above treatment is carried out daily until all ulcers have a clean granulating surface (usually four to five days); when this stage is reached mouth-washes are given less frequently, but not less than three times a day; the application of silver nitrate is discontinued, but the syringing of the interdental spaces is carried on. All roots and septic teeth are then extracted and all necessary fillings completed as soon as the ulcers commence to heal.

When obtainable, glycerin and tannic acid is rubbed into the gums daily when the application of silver nitrate has been discontinued.

From the commencement of the treatment patients are instructed to brush their teeth, using the brush with a vertical action, and by using the bristles of the brush in a similar manner to a toothpick—namely, for the purpose of cleaning out the interdental spaces.

Treatment of Chronic Cases.—The treatment of these cases is different from the above in that any attempt to save the teeth in the affected area is useless. Marked bone destruction or a history of several attacks extending over a period of several months necessitates the extraction of the affected teeth. Before this can be done, however, it is essential to render the mouth comparatively clean; two or three days' treatment as indicated above will usually suffice. Local anaesthetics must on no account be used in these cases.

Patients are not cured until the specific organisms can no longer be found by bacteriological examination.

Clinically, patients may be considered fit for duty when all ulcers are completely healed and the gums no longer bleed when pressure is applied to them.

The usual duration of the disease from commencement of treatment is ten to fourteen days, patients usually becoming free from the specific organisms on the eighth or ninth day.

Statistical Evidence.

This has been obtained from two sources: (1) Reports from dental officers of the number of cases of acute ulcerative gingivitis occurring among patients seeking dental treatment. (2) Mouth inspection, by myself, of

soldiers living under various conditions but not reporting sick on account of dental disease.

1. Number of visits made to dental officers in a certain area during a period of one month ... 9,380
Number of men treated (approximately) ... 7,000
Number of cases of acute ulcerative gingivitis 46

Percentage incidence, 0.65.

2. The mouths of 889 men from various units in the army were inspected. These included:

(*a*) Men returning after a four days' tour in the trenches. Samples taken from each company of six battalions.

Positive acute ulcerative gingivitis	2	= 0.76	per cent.
Dirty mouths	31	= 11.4	,,
Moderately clean mouths ...	76	= 25.7	,,
Clean mouths	157	= 57.1	,,
Men wearing dentures	13	= 4.8	,,
Total	279		

(*b*) Troops in back areas—A.S.C. workshops and M.T. companies.

Positive acute ulcerative gingivitis	1	= 0.35	per cent.
Dirty mouths	49	= 15.8	,,
Moderately clean mouths ...	68	= 22	,,
Clean mouths	159	= 51.8	,,
Men wearing dentures	32	= 10	,,
Total	309		

(*c*) Reinforcements from the base.

Positive acute ulcerative gingivitis	1	= 0.33	per cent.
Dirty mouths	51	= 17	,,
Moderately clean mouths ...	67	= 22.2	,,
Clean mouths	154	= 51.1	,,
Wearing dentures	28	= 9.3	,,
Total	301		

The above figures, although not large, appear to show that acute ulcerative gingivitis is present in approximately 0.3 per cent. of men behind the line, and in 0.7 per cent. of those returning from the trenches. None of the cases found at inspection were severe, but all had definite sloughing of the interdental papillae.

Certain other points noted at inspection are of interest. On the whole the condition of the teeth is fair. Of the infantry only a small proportion clean their teeth at all, but in spite of this there is a higher percentage of clean mouths among them than in other branches of the service. This is in all probability due to difference in the diet. Certainly not more than 30 per cent. of the men use their toothbrushes for the proper purpose, although at least 90 per cent. have them for "kit inspection." Of the men (70 per cent.) who do not brush their teeth, 30 per cent. use their brushes for cleaning buttons, while the remainder keep the brushes for inspection purposes only. Caries is present in the majority of the men, and could be largely prevented if more dental officers were available. It would then be possible to inspect troops regularly and fill the cavities while they are still small.

Simple gingivitis is present in a large number of the men who do not keep their teeth clean, and periodontal disease is common amongst the older men and those who have always neglected their teeth.

SUMMARY.

From the foregoing report the information obtained can be briefly summarized as follows:

Severe cases of acute ulcerative gingivitis represent 0.65 per cent. of all men reporting sick on account of their teeth.

Only a small proportion of men suffering from the condition report sick until the pain becomes severe, and there is considerable ulceration.

Significant points affecting the army in connexion with this disease are its contagious nature, the disability produced, and the subsequent loss of teeth unless treated early.

The average duration of treatment in first attacks is ten days, provided treatment is rigorous.

Relapses are common, and probably chiefly due to inefficient treatment or too early discharge.

The treatment is laborious, and personal daily treatment by a dental officer is required for each case.

I am indebted to Major-General H. N. Thompson, C.B., C.M.G., D.S.O., Director of Medical Services, for affording me special facilities in connexion with this and other dental work, and to Major J. W. McNee, D.S.O., Assistant Adviser in Pathology, for many valuable suggestions and help in laboratory work.

ON THE AMINO-ACID CONTENT OF NUTRIENT MEDIA.

BY

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(Report to the Medical Research Committee.)

THE preparation of nutrient media for bacteriological purposes was considerably enhanced by the adoption of Eyre's scale of acidity.[1] A further advance was made when the reaction was adjusted to $P_H = 7.35$ with phenol-sulphonephthalein as the indicator.[2] Another stage is gradually being evolved by a more generally recognized necessity for the provision of substances associated specifically with parasitic metabolism.

The ultimate objects of the production of nutrient media are, however, not concerned solely with the compounding of material for exhibiting the growth of bacteria from the visual standpoint. They include also a conception of the biochemical activities of the micro-organism, and envisage the possibility of developing the varying antigenic capacities and agglutinable properties which are manifested during the course of an infection.[3] They may even foreshadow the reproduction *in vitro* of the various factors which confront the bacterium when seeking its food in living animal tissues. Media intended for isolation purposes only might be considered, therefore, as a blend of specific amino-acids and other compounds habitually used by the parasite, dissolved, or constituted, under those physical conditions best suited for its enzymic actions; while media devised for the purposes of immunity might be expected to incite bacterial growth under conditions approximating to the lytic and physical changes which accompany vital response to an irritant.

Towards some of these aims our work on the purification of peptones was directed.[4] Its continuance was prevented by the onset of routine military work; but the introduction of numerous new media designed to meet restricted food supplies has opened up a number of complexities. It seemed worth while, therefore, to make an attempt to consider these from the standpoint of the gross amino content, leaving the previously proposed examination of particular amino-acids to a later investigation.

One of the reasons which led Cole and Onslow to adopt the casein preparation known as "laitproto" as a base for the production of a nutrient medium was the fact that it yielded regularly a rich and fairly equable supply of amino-acids in a tryptic digest.[2] Dorothy Lloyd, when using the same medium, observed that meningococcal growth increased in relation to the number of hours of digestion, and that as the percentage of amino-acids was raised the necessity for the addition of catalysing or vitaminic influences was decreased.[5] Rettger, Berman, and Sturges suggested that, unless free amino-acids are present in a sufficient amount, the development of the enzymes necessary for the cleavage of such simple bodies as peptones and proteoses does not take place.[6] As a practical application of these findings, Glynn, among others, prior to undertaking his extensive work on dysentery bacilli, determined the amino-acid content of several peptones and selected one which yielded a satisfactory formaldehyde figure.[11]

In the preparation of nutrient media, therefore, it is essential to ensure that there is an adequate content of free amino-acids of low molecular weight. Hence we proceeded to estimate the amino content of ordinary and special media and to determine the minimal percentage necessary for effective growth.

The Formaldehyde Figures for Nutrient Media.

The estimation of the approximate amino-acid content may be carried out in a few minutes by the simple method described in Plimmer's handbook of biochemistry.[7] It enables the results to be recorded in terms of N/10 alkali per 100 c.cm. of medium. Our findings are incorporated in Table I.

TABLE I.—*Amino-acid Content of Nutrient Media (Formaldehyde Figures).*

	N/10 Alkali per 100 c.cm.
1. Blood serum prepared for Loeffler's medium ...	22.5
2. Various commercial peptones:	
(*a*) 1 per cent. solution	5.0
(*b*) 1 per cent. ,, ...	6.0
(*c*) 1 per cent. ,, ...	8.75
(*d*) 1 per cent. ,, ...	14.0
(*e*) 1 per cent. ,, ...	25.75
3. Various beef extracts:	
(*a*) 1 per cent. solution	5.0
(*b*) 1 per cent. ,, ...	6.0
(*c*) 1 per cent. ,, ...	9.0
4. Various meat substitutes (yeast derivatives):	
(*a*) 1 per cent. solution	8.0
(*b*) 1 per cent. ,, ...	11.0
5. Vegetable broth:	
Potatoes 300 gm., carrots 150 gm., turnips 150 gm., water 1,000 c.cm.	2.5
Ditto, *plus* 30 gm. yeast, grown for 24 hours...	10.0
Ditto, *plus* 60 gm. yeast, grown for 24 hours...	18.0
6. Tryp-agar (500 gm. heart, water 1,000 c.cm., digested 3 hours):	
Digest 1	29.0
Digest 2	27.5
Digest 3	25.0
7. Laitproto media (casein No. 6, 100 gm., water 1,000 c.cm., digested 15 days) diluted 1 in 3:	
Digest 1	47.0
Digest 2	53.0
Digest 3	43.0
Digest 4	48.6
Digest 5	54.0
8. Soy-bean media (beans 100 gm., water 1,000 c.cm., digested 15 days)	55.5
9. Oat media (uncrushed oats 100 gm., water 1,000 c.cm., digested 15 days)	0.0
10. Maize media (uncrushed maize 100 gm., water 1,000 c.cm., digested 15 days)	0.0
11. Nasgar media with peanuts replacing nutrose, diluted 1 in 3	36.0

Taking the contents of ox blood serum diluted for coagulation as Loeffler's medium, we may compare the figures of various composite media and of their several components. The differences in the amino contents of the several peptones are striking, and indicate the need for adjustment in the amount required for peptone water. It would be worth the while of commercial houses to guarantee a definite percentage of amino-acids and proteins in their products.

There is a similarity between the content of beef extract and yeast extract, although the amino percentage of each is inconstant. At its present low price the latter is the more economical. It cannot, however, be employed indiscriminately. From Table III it may be inferred that when used in quantities which are necessary for the early growth of bacteria in cultures, an inhibitory factor appears and growth is checked. The cause of this inhibition has not yet been fully worked out, but it is possible that an excess of potassium phosphate plays a part. These extracts seem to be useful as accessory constituents, but in view of other combinations of amino-acids which are free from their drawbacks, they may be regarded as emergency rations only.

The various formulae which have been suggested recently for vegetable broths have not yielded satisfactory media. Their authors have lessened an apparent cheapness by adding 1 or 2 per cent. of expensive peptone powder. We attempted to increase their amino values by the addition of varying quantities of baker's yeast, allowing growth to take place for a day, then heating the mixture for a few hours and finally digesting it with our own pancreatic extract for three weeks. The results were not encouraging. The ultimate amino content was increased, but the intestinal organisms alone grew easily in the medium. Anthrax even gave a modified growth, owing apparently to the presence of some adverse cleavage substance.

The tryp-agar medium gives a small yield for the amount of muscle material employed.[8] It is probable that the digest should be continued for a longer period. At the present time and in its present form it is one of the most expensive of our media, and yet requires the addition of a catalyser or vitamine to render it useful for those bacteria which grow with difficulty on artificial media. The laitproto medium contains a high percentage of amino-acids and is economical.[2] Different digests are not constant, but the amino contents can be adjusted easily. Nasgar, in which peanut powder replaces the nutrose, as suggested by Wallis, has a good amino content, and is an improvement upon the ordinary nutrose nasgar.[9]

With the digests of oats and maize soups we have not yet been successful. Other proteolytic ferments are perhaps necessary. But from soy beans we have obtained a useful extract which promises well. Not only does it yield a high amino content and furnishes a cheap medium for routine work, but it appears to provide dysentery bacilli with some specific nutrient. Sown with the strains of Shiga and Flexner which we possess, such a profuse growth appeared that it seemed possible to think of it as an enrichment medium for these bacilli. As a useful addition to the brilliant green method of isolating pathogenic intestinal organisms it calls for trial, as it occasions peculiar and distinctive colonies also with typhoid and the paratyphoid bacilli. These preliminary statements may perhaps tempt others to test our findings with their own strains. The following example may be of interest:

To an emulsion of one of the stools under examination for dysentery bacilli there was added a loopful of a twenty-four hours' growth of Shiga bacilli in a fluid medium; to another emulsion of the same faeces a similar quantity of Flexner bacilli was added. A standard loopful of the faecal mixture was then transferred to 1 in 1,000 brilliant green media. After incubation for twenty-four hours the usual quantitative plating was carried out. The figures were as follows:

TABLE II.

Brilliant Green 1 in 1.000.	Amino-acid Content.	Shiga: No. of Colonies.	Flexner: No. of Colonies.
In laitproto	36	6	0
In 2 per cent. peptone water ...	6	1	0
In soy bean broth	55	41	2
In soy broth *plus* alcoholic extract soy beans	55	68	20
In soy broth *plus* watery extract soy beans	55	41	20

The soy bean vitamines appear therefore to act vigorously with regard to growth stimulation. They are considered in a later section.

The Percentage of Amino-acids Necessary for Bacterial Growths.

In order to ascertain more closely the part played by amino-acids in nutrient media—namely, whether they form the main food of the bacterium, or constitute only an easily assimilated nutrient ensuring a sufficiency of metabolism for the formation of substances capable of breaking down proteoses or proteins—it is necessary to determine the minimal and maximal quantities of amino-acid required by the various pathogenic organisms. The quality of the amino-acids is, of course, an important factor, but we are compelled to leave this for the moment; the fringe of the question which we touched upon in the previous work on Silk peptones opened up problems too large for discussion at present. The use of single or grouped amino compounds produced so many alterations in the usual sugar and other reactions that it is better for the time being to keep to the general standpoint.

The results of the growth of non-proteolytic bacteria in solutions of varying amino-acid density are recorded in Table III. The relation of amino to albumin content in the media for the proteolytic types is not yet defined.

In these observations certain empirical figures are employed to denote the number, size, opacity, etc., of the colonies upon solid media when compared with those yielded by the media we are accustomed to in our daily routine work. The inseminations were made by using a standard loopful of a twenty-four hours' culture standardized according to the methods employed in agglutination work. The estimations of the growths were made after twenty-four and forty-eight hours. The media were all filtered repeatedly through dense paper, in order, so far as possible, to remove the vitamines. Dilutions of the resultant extracts were made, and the formaldehyde figure determined for each solution. It was recognized that simple calculations would not exclude the varying solubilities of the

different amino-acids, and that it would be more precise to add an exact amount of each amino-acid to the solutions. We have not yet, however, reached the stage when the isolation of the individual amino-acids has become a matter of practical application.

TABLE III.—*Bacterial Growth in Media Varying in Amino Content.*

Medium.	Amino-Acids.	Cocci.			Bacteria.						
		Meningo.	Strepto.	Pneumo.	Coli.	Typhoid.	Para A.	Para B.	Shiga.	Flexner.	Anthrax.
Vegetable broth ...	2.5	0	2	0	3	1	0	1	0	1	2
Ditto, *plus* 1 oz. yeast	10	0	2	2	5	1	1	1	1	1	0.5
Ditto, *plus* 2 oz. yeast	18	0	2	2	6	2	1	1.5	1	2	0.5
Yeast extract—1 per cent. ...	8	0	2	2	6	2	3	1	2	4	2
4 per cent. ...	32	0	0	0	5	3	2	4	0	4	3
6 per cent. ...	48	0	0	0	4	3	1	4	0	4	2
Tryp-agar	27.5	3.5	5	4	5	5	5	5	5	5	4
Nut nasgar— (*a*)	36	4	7	3	5	5	5	5	5	5	5
(*b*)	18	0.5	1.5	2	4	4	4	4	3	4	4
(*c*)	13.5	0	0.5	0.5	3	4	2	4	3	4	3
(*d*)	9.5	0	0	0.1	2	2.5	1 5	3	1	3 5	2
Laitproto— 1	48.6	5	4.5	4	5	5	5	5	5	5	5
2	36	4	3.5	4	4	5	4	5	3	4	4
3	26 5	2	2	1	3	4	4	5	3	4	3
4	17 5	0	1	1	2	3	2	4	1	2	2
5	14.5	0	0.25	0.5	2	2	1	4	0.5	2	2
Soy bean— (*a*)	55.5	2	5	2.5	6	4	3	6	8	6	7
(*b*)	31	0	2	2	5	4	3	5	6	5	6
(*c*)	25	0	1	0	4	4	2	4	5	4	5
(*d*)	12 5	0	0.25	0	3	3	1	3	4	3	3
Oat broth	—	0	0	0	5	0	1	2	0	1	0
Maize broth... ...	—	0	0	0	5	0	1	1	0	0	0

A glance at the findings summarized in Table III will reveal the fact that the meningococcus fails to grow upon any medium which contains less than the amino content represented by the formaldehyde figure of 25, while streptococci are able to multiply at a lower percentage. It seems, therefore, that the formaldehyde figure designed for the Gram-negative cocci and for the pneumococci and streptococci need not be more than 40 and should not be less than that amount. The intestinal organisms, on the other hand, are habituated hereditarily to the scantiest of fare, but even they require a minimum of 20 for the production of representative colonies and reactions.

It seems a feasible proposition for a provisional standard to take these two figures and to adjust our media thereto. Such a procedure would simplify methods of preparation, in that, once a concentration of 40 was obtained, it would be the easiest of proceedings to add the necessary dilution of sterile melted agar or normal saline.

The Influence of Vitamines on the Amino-acid Content.

The addition of accessory factors to nutrient media has passed into general use. It has assisted materially in the profuseness of primary cultures, but has introduced some difficulties and not a few contaminations. How far the increased growths are due to these super-nutrient substances is a question asking for solution, and one which affects somewhat the institution of any amino standard. To deal with the matter from the quantitative standpoint is far from easy, but an attempt has been made to add roughly similar amounts of various vitamines to the media used in the experiments.

For the preparation of the vitamines 20 grams of egg yolk, oats, pea-flour, or ascitic fluid were added to 100 c.cm. of 80 per cent. ethyl alcohol and extracted at 37° C. for four days. The supernatant fluid was then decanted. Calculated amounts were added to each medium at the time the plate was poured. In some instances the alcoholic extract was added directly; in others the alcohol was evaporated to dryness at 37° C. and the residue taken up in sterile water. Examples of the results attained are given in Table IV.

TABLE IV.—*The Relation of Amino Content and Vitamines.*

(Vitamines prepared by adding 20 grams of powdered substance to 100 c.cm. 80 per cent. alcohol, extracting at 37° C. for four days and decanting the supernatant fluid.)

Medium.	Amino-Acids N/10 Alkali.	No Vitamine.	0.25 % Egg Yolk.	0.25 % Pea Flour.	0.25 % Oat Flour.	0.25 % Ascitic Fluid.
MENINGOCOCCUS.						
Laitproto ...	35	4	6	6	4 5	6
,, ,, ...	26 5	2	4	4	3	5
,, ,, ...	17.5	0	0	0	0	0
,, ,, ...	14.5	0	0	0	0	0
Yeast extract ...	8	0	3	3	3	3
,, ,, ...	32	0	0	0	0	0.5
,, ,, ...	48	0	0	0	0	0.5
			0.5% Egg Yolk.	0.5 % Pea Flour.	0.5 % Oat Flour.	0.5 % Ascitic Fluid.
PNEUMOCOCCUS.						
Laitproto ...	35	4	5	5	5	5
Yeast extract ...	8	2	4	4	4	4
Vegetable broth and yeast	17	2	2	2	1	2
STREPTOCOCCUS.						
Laitproto ...	35	4	5	5	5	5
Yeast extract ...	8	2	6	5	4	4
Vegetable broth and yeast	17	2	1	1	1	1

In the case of the meningococcus, it was evident that on laitproto growth appeared so long as the amino content did not fall below 20, but that when that percentage was not reached the stimulating factors failed to act. On yeast extract media, however, the vitamines induced growth when the amino content was lower. An explanation of this may, perhaps, be found in the large amount of nucleinic derivatives present in yeast mixtures.

With pneumococcus and streptococcus the presence of vitamines was similarly associated with an increased growth, although for these organisms a lesser density of amino-acids suffices.

The source of the vitamines seemed to be immaterial, within limits. Those obtained from soy bean, however, appeared to exert some specific action upon dysentery bacilli. When 2 per cent. peptone water, laitproto broth, and soy bean broth were quantitatively sown with dysentery bacilli and alcoholic or watery soy extracts added, the results appended in Table V were given.

TABLE V.—*Soy Bean Vitamines and Dysentery Bacilli.*

(20 grams soy bean powder, 100 c.cm. 80 per cent. alcohol, extracted at 37° C. for four days; extract decanted off.)

Medium.	Amino N/10 Alkali.	No Vitamine.	Plus Alcoholic Extract ½ %.	Plus Watery Extract ½ %.
SHIGA.				
Soy bean	55	1	10	8
Peptone water 2 %	12	0	3	0
Laitproto	45	2	4	2
FLEXNER.				
Soy bean	55	2	10	8
Peptone water 2 %	12	1	5	3
Laitproto	45	2	4	2

Although an acceleration of growth became evident in all the media, the most marked increase was evident in the soy broth. This observation led to the inclusion of

soy bean vitamine in the brilliant green soy broth previously employed for the isolation of dysentery bacilli from faeces. The cultures appeared free from turbidity, but, upon plating, an adequate growth of dysentery bacilli followed. Both the alcoholic and the watery extracts were effective, although the alcoholic appeared to act best. The observation will be applied more fully during the coming autumn work.

Remarks.

We venture to submit that a proposal for the general adoption of a uniform amino-acid standard content for nutrient media may be supported by the following considerations:

(*a*) Teaching would be simplified, in that the student would be less confused by differences in size, contour, opacity, etc., of colonies grown on media of varying contents.

(*b*) A standard of nutrition would increase the comparative value of work carried out in different laboratories.

(*c*) The action of bacteria upon secondary substances, such as starch, sugars, alcohols, etc., would be more precisely estimated when adequate free amino-acids were invariably available. Troubles with late lactose fermenters, poor indol producers, mutations, etc., might be lessened.

(*d*) For use in vaccines and for antiserum production the antigenic properties might be less variable.

(*e*) In the preparation of emulsions for purposes of agglutination there might be a more equally agglutinable type of bacillus.

(*f*) A considerable economy in material, time, and labour would be effected, and a wastage of superfluous nutrition prevented.

The suggestions embodied in (*c*) and (*d*) have been prompted by the indications of some preliminary work which is now in hand. They seem to bear a particular application to the Gram-negative cocci.

We are aware that the proposition does not envisage any standardization of the vitamine fraction. The addition of vitamines is rather an art than a science at present, and fortunately it is less necessary when the amino-acids are in excess.[5] We may also deplore that it does not attempt to construct a medium which reproduces the physical changes which occur in infected tissue, or take into account the action of the secondary products of bacterial action. When Sasaki and his co-workers have developed this side of the problem more fully we may be led to consider the provocation of prophylactic immunity on more strictly physico-chemical lines.[10] Nevertheless, working always with a standard measure of nutriment, we may obtain more concordance in our cultures and perhaps gain a broader insight into the mutations of bacterial action during latent or active infections.

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AN ANALYSIS OF CAUSES OF BREAKDOWN IN FLYING.

With Notes on the Nervous Mechanism of the Flying Man.

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For this analysis one hundred consecutive cases were taken. Nothing was done in the way of selection of cases, which all came under review by the Royal Air Force Special Medical Board, E.E.F.

Breakdown is the term I have chosen to describe those patients who were rejected by the Board as "permanently unfit," for permanent cannot be looked on as other than a relative term. None can say how far many of these rejects may ultimately recover, but I can safely assert that none will be fit to fly for six months, most not for years, and some (in the case of those breaking down under training, probably many) never.

A. *Categories Examined.*

Qualified pilots	33	
Qualified observers	3	
Qualified balloon officer	1	
Total qualified flyers		— 37
Pilots under instruction	61	
Observers under instruction	2	
Total pupils		— 63
		100

B. *Causes of Failure.*

1. Psychological or subjective—"Nerves," loss of confidence, or general nervous breakdown:

Qualified pilots	20
Pupil pilots	44
Qualified observers	2
Balloon officer	1
Total	67

2. Objective nervous conditions:

Epilepsy and fainting fits	4
Giddiness, nausea, vomiting in air	11
Total	15

These are closely allied to Group 1. The total failures in "Nerves" group = 82 per cent.

3. Physical complications:

Visual troubles, mostly bad landings	4
Heart disease	4
Crash injuries (direct)	2
Tubercle	3
Asthma	1
Various	4
Total	18

C. *Points Reported on.*

The following are the chief points recorded in the nervous subjective group (67 cases), which is that specially selected for this article:

Nervous family history	18 = 27	per cent.
Nervous personal history	27 = 40	,,
History of previous nervous breakdown	20 = 29.8	,,
Bad dreams, nightmare, or somnambulism—		
In infancy	14 = 20.9	,,
In adult life	37 = 55.2	,,
History of concussion or shell shock	25 = 37.3	,,
Evidence in higher cerebral centres—that is, impairment of memory, concentration, judgement, temper	35 = 52.2	,,
Malaria	24 = 28	,,
Reflexes—		
Normal	11 = 16.8	,,
Exaggerated +	20	
,, ++	26 = 82.2	,,
,, +++	9	
Absent (syphilis? tabes)	1 = 1.5	,,
Tremor + or ++	49 = 73.1	,,

Of the 67, only 2 could not be placed under one or more of these headings: one was a qualified observer who, being shot down, had no further confidence in the pilots; the other, who had had a crash, was congenitally stupid and dull. Of the 24 malarial cases 17 occurred in officers who had been on service and whose mentality was manifestly affected thereby.

D. *Effects of Crashes.*

Of the 67 who lost their nerve a considerable number had to be rejected after crashes, either very recent or somewhat more remote. Many of these cases occurred amongst observers returning from service to qualify as pilots. These men invariably claimed that they had got over their crash, but this was found by experience not to be the case.

Loss of nerve after crashes—	
Qualified pilots	13
Pupils	18
Total	— 31
Loss of nerve, no crash	36
Grand total	67

Of the twenty qualified flyers who lost their nerve the history is:

After aërial fight	2
Stress of service	6
Stress of service in German East Africa (a malarial country)	2
Crashes	9
Crashes (alcoholic excess)	1
Total	20

Critical Survey.

In the above analysis will be noted at once the large percentage rejected for psychological reasons—nervousness and loss of confidence; 67 per cent. made this complaint their chief explanation of failure. But besides it may be noted that a further eleven men who complained of faintness and nausea in the air as their main symptom were all, except two, exceedingly nervous subjects, and that no objective sign to account for the nausea and faintness could be found in them. If one adds the epileptic group of four, one gets roughly 80 per cent. who were rejected from nervous causes.

Any medical officer who has to work amongst airmen will admit the question of "nerves" is, and must continue, one of the most important and most difficult in this branch of medicine. If we find that more than half (55 per cent.) of those who fail under instruction do so for this reason, it is surely our duty to try and discover a means of weeding out such unlikely, such costly and dangerous material as those who are below the average of nervous competence before they so much as cross the threshold of a school of aeronautics.

My review is based on an experience of eighteen months with the R.F.C. and R.A.F. I have been in charge of a large training camp, a member of the R.A.F. Special Invaliding Board, E.E.F., since its inception, and also, later, a member of the "Commissions" Board which examines candidates for admission as flying officers or N.C.O.'s, and which has been in existence in Egypt for some four months only. Until the institution of the latter board, pilots were accepted on medical officers' certificates, and no special standards were adopted beyond Class A for general service. It is on the experience of the failures amongst the latter, as well as amongst those passed fit by the Commissions Boards in England or in Egypt, that these deductions are founded.

The problem is not easy. If one could reject out of hand all those who had a nervous history, a history of concussion or of nervous breakdown, or who had very exaggerated knee-jerks, the matter would simplify itself considerably, as one would certainly include under these headings all or almost all pupils who fail from nervous troubles. But the mesh of such a sieve is far too fine, and fails to let through a type which has over and over again proved the finest flyer of any. I refer to the highly strung, sensitive type—keen, alert, full of energy, "nervous" it may be, but just sufficiently so to give him that promptitude of action and reaction that is so essential in the air. His nerves are well under control, he is healthy otherwise—in short, a thoroughbred among men.

How, then, are we to judge? Has anything pathognomonic been found among the failures, either as pilots or as pupils under instruction? Is there anything in the history of such which will enable us to discriminate and lead us to reject these unsuitable types out of hand? Or is there in their history even any indication that will lead us to eye that type with grave suspicion, allowing them to pass only after a most searching examination by experts? I think so; certain facts are more serious than others, certainly, but, even so, one may by reviewing carefully a candidate's past nervous history get information of momentous value in deciding fitness for duty as a flying officer.

Let us review the points seriatim:

1. *Nervous Family History.*—Twenty-seven per cent. of failures gave such a history—that is, either parent was of a nervous disposition, brother or sister had a nervous breakdown, one had a sister in an asylum, etc. I do not want to labour the value of this, but it is very certain that unstable nervous temperament is hereditary, and, though this alone is not very important, its existence should call for the further history to be very carefully sifted.

2. *Nervous Personal History* (40 per cent.).—By this I mean they were nervous as children, had St. Vitus's dance, habit spasm, bit their nails, avoided the usual rough and tumble of children's sports, etc. This point is to be considered in relation to 1, and

3. *Actual Nervous Breakdown* (30 per cent.).—Nothing I know of will more surely lead to failure in air work (especially piloting) than the previous history of a serious nervous breakdown. I do not refer to a breakdown of a week or a fortnight, but to those lasting two or three months, often involving cessation of duty (but not necessarily so), producing, however, definite neurasthenic symptoms, with mental depression, insomnia, loss of power of concentration, and so on. I do not think it matters much what produced this, whether worry at the office, or an accident in the hunting field, or a bomb in battle, so long as the symptoms have been pronounced, nor do I consider it essential that present symptoms exist, though usually one can detect them if one observes closely enough. Sometimes these symptoms occur after concussion, and when they do they make the acceptance of such a candidate more and more hazardous.

Does it matter at what age the breakdown has occurred? I hardly think so, except that if it be said to have occurred before 9 or 10 years of age, that is, before puberty, I should be inclined to doubt its reality and would ignore it in the absence of other signs. From puberty on I think it is about of equal significance at all ages. I need hardly say here that one pays the greatest attention to statements of nervous upset before puberty or at that time, not necessarily for the fact of the breakdown which may have been doubtful or apparently trifling, but for the indication that such a story gives of an otherwise unstable nervous system.

Does it matter how long ago? Again, No, if sufficiently definite and prolonged, and not occurring in infancy. The nervous system does not recover enough to warrant acceptance for training, at least under war conditions.

Should it apply to observers who come up for training as pilots? In many cases, Yes; they should not be accepted, but here one would except certain men whose strength of will and character stamp them as far above the average—only they must be very carefully chosen, show no active symptoms, and have had a prolonged rest since the breakdown.

Does the same apply to qualified pilots? Not to the same extent. Much will depend here on the cause of the breakdown—for example, simple stress of service or malaria should be recovered from in time, and again much depends on the individual. It is here that experience in dealing with flying people counts for much. I do not mean to imply that all such cases will fail to qualify as pilots if given the opportunity to do so. What one finds is that a large percentage fails in training, and of the few who qualify, only a small proportion can stand the strain of active service sufficiently long to justify the time and money spent in their training.

4. *Dreams, Nightmare, and Somnambulism* (in infancy 21 per cent.; in adult life 55 per cent.).—I am convinced that nightmare in infancy (or somnambulism) is a sign of an unstable nervous system, and that its presence to a pronounced degree should mark a candidate as suspect, and is enough to call for a searching examination of his nervous system otherwise. In adult life it is even more important, especially where there is a history of accident or injury, flying or otherwise. But nightmare is invariably associated with other derangement of the cerebral functions to be detailed later. One would roughly lay down that even a qualified flying officer should be free from nightmare for eight or ten weeks at least before starting to fly again. Indeed collateral symptoms will usually demand a much longer rest.

5. *History of Concussion or Shell Shock.*—Thirty-seven per cent. gave such a history. Although these are not by any means the same entities, yet their effects are so similar that they may be taken together. Their importance varies considerably, depending on whether one is dealing with an officer who can fly or with a candidate for admission.

(*a*) *Candidates.*—In these a history of concussion should always be regarded seriously, but several details should be taken into account in coming to a definite decision. If the concussion was accompanied by prolonged unconsciousness—for example, three or four days—then acceptance should be very carefully considered and granted only in very special cases. If followed by serious nervous breakdown, then reject in every case. These conclusions apply equally to shell shock, which on the whole seems to be more often followed by a nervous breakdown, and is therefore more serious for flying purposes. A good deal depends upon the age at which the concussion took place and consequently on the lapse of time since. Thus, if it happened before the tenth year, I think, broadly speaking, it is much less serious than from the tenth to the twentieth year.

(*b*) *Qualified Pilots.*—Even though unconscious for two or three days, if there has been no fracture of the base, if recovery is speedy and complete without impairment of the higher cerebral functions and without nervous breakdown, such, after three months' or even after two months' rest, may be safely employed again as flying officers in not too strenuous circumstances. A good deal depends in these cases on the individual's own wishes as regards continuing to fly. Confidence is a most essential asset in forming conclusions in these cases. They should be given light "graduated flying" duties, with dual control at first, and their performances carefully watched before being launched as fully responsible instructors, ferry pilots, etc. Indeed, it is possible that with a year or two's rest many more may ultimately be classified fit than is at present the case. But I would like to utter a word of warning in cases that have sustained more than one attack of concussion, even though recovery has been apparently quick and complete. They should be given very prolonged rest before flying again, even if they are not totally rejected.

6. *Affection of Higher Cerebral Functions* (occurred in over 52 per cent.).—By this is meant derangement of memory, powers of concentration, judgement, temper, affections, including, I doubt not, reaction times, and intimately associated with dreams, nightmare, and manifested in a very serious way as actual obsessions and hallucinations. In both candidates and flying officers these derangements, whether past or present, are to be regarded seriously, and no matter what their cause their presence in the history will weigh heavily in the balance against fitness for flying duties, most heavily in the case of

candidates for admission as pilots. It does not matter whether, as is most usual, they are associated with an admitted nervous breakdown or not. This is a frequent concomitant of concussion and shell shock. Of course, such symptoms to be serious must be more than transitory—that is, lasting two or three weeks at least. They are probably also less serious after a definite accident or injury than if coming on as the result of pure mental worries in a neurasthenic subject. With experienced flying officers the case is somewhat different, and after two or three months' rest and absence of symptoms they may safely be allowed to resume flying—light base duties. But so far I have no notes or recollection of any who have successfully tackled service as pilots after such a breakdown if at all prolonged. Some have tried as observers, others as pilots, but they do not last. If ever they are to become fit for service flying again they need more rest than it has so far been possible for them to have while under my observation. However, not a few have made good as very capable instructors. Much depends on the individual; if he is keen and wants to fly he will often by mere will power get over any temporary subjective difficulties. If the will is absent it is useless to force him, and even when the will is present it may be painfully tragic to allow him to fly. Great discrimination is needed, and personal knowledge of such officers in private life helps enormously in forming the right conclusion.

7. *Malaria.*—Thirty-six per cent. gave a history of fairly recent malaria. Of this number 25 per cent. was in flying officers back from active service. I cannot put down too strongly my conviction that malaria is often the direct cause of a most profound breakdown of the nervous system, and especially of the higher cerebral processes, producing depression, bad memory, loss of concentration, irritability, delayed reaction times. When the possibility of such an infection exists let us never neglect to examine the blood—not for parasites alone but also for any increase in large mononuclear leucocytes. Under rest and appropriate treatment these cases do well and are to be regarded in most cases as but temporarily unfit.

8. *Reflexes.*—Eighty-two per cent. had exaggerated reflexes. This is included partly in order to protest against too much significance being attached to this phenomenon. How many hundreds — thousands, may be — of excellent pilots have exaggerated knee-jerks! Taken by itself the knee-jerk is almost useless as a test of the soundness of a prospective pilot's nervous mechanism. Taken with other symptoms and signs its value is definite enough.

9. *Tremor* (73 per cent).—Almost the same remarks apply as for reflexes, yet tremor of the tongue is, if marked, a very useful clinical symptom, I think, of nervous instability. But, again, it must be taken only in association with other symptoms.

Suppose, then, we come across a candidate with a definite history of mild nervous instability, in fact, a highly strung person—are we to accept or reject him, and on what grounds? It is well known that some men of this type make the finest, the most brilliant flying officers. The choice is not without responsibility, for the slightest mistake in training will ruin their chances. One has to consider the man's individuality. He is nervous, but are his nerves well under control? This is not easy to test, and though certain methods have been suggested, a good deal must still be left to the insight and judgement of the examining medical officers. Will he fly two hundred hours on service? Then accept him, for in that time he will probably justify training expenses. Further, it is suggested that one would much sooner accept a well educated nervous type as a pilot than one whose mental training has been very limited. For the nervous, pale faced, introspective, East End clerk, with little or no experience of outdoor exercise and sport, whose habit of life almost compels him to think far too much of himself, one would probably advise rejection; while for the university athlete, equally nervous, but trained to ignore himself and to control his feelings, trained to act and think of and for others, of good physique and broad in mental outlook, one would on the whole advise acceptance. The one is by habit and training habituated to self-control, the other to self-commiseration.

This leads me to say that much depends in these cases on the manner in which the pupils are handled in training. These nervous subjects are very sensitive of criticism and cursed with an anxiety to do well which exceeds their powers of execution. Having been found fault with, perhaps somewhat brusquely, they begin to worry over their mistakes, think they are stupid and slow, become over anxious, and, instead of progressing, get worse. Flying occupies their dreams, and soon fills their minds to the exclusion of everything else—in short, flying becomes an obsession. An instructor who is himself nervous is especially disastrous for such pupils. Akin to this is the error of "stunting" a timorous beginner in the hope of increasing his confidence.

Finally, a word with regard to medical officers of the Royal Air Force. There still exist, unfortunately, doctors who believe that the neurasthenic is a fraud, that his ailment is imaginary, or, more accurately, that his ailment is voluntarily assumed and capable of being equally voluntarily set aside. Such types should not be chosen as medical officers for flying schools.

There is great scope for the finest scientific minds in the investigation of all aërial medical problems.

SOME ASPECTS OF MAXILLARY ANTRUM DISEASE.

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THE purpose of this short paper is to illustrate by means of four cases the relation of antrum disease to surrounding diseased organs. In these cases the antrum disease was the primary infection, or, at any rate, its presence prevented these structures recovering under the usual methods of treatment.

CASE I.—*Dacryocystitis and Antrum Disease.*

Female, aged 31. Left dacryocystitis and mucocele of the sac and watering of the right eye, of twelve months' duration. The left lacrymal passage when syringed was fairly patent. The patient complained of "nasal catarrh," and stated that the mattering at the left inner canthus was always worse after a cold. Proof puncture demonstrated the presence of double antrum disease, the left side containing more pus. As is usually the case, syringing of the sac, with the after-introduction of argyrol, etc., did not produce any benefit after three weeks' trial.

A double radical antrum operation was then done, with the result that the lacrymal condition returned to normal within a week after the nasal operation, and has remained so for four months at the time of writing, the nose condition being also normal.

CASE II.—*Mastoid and Antrum Disease.*

Female, aged 26. The patient had had a radical mastoid operation performed on the right ear two years previously by another surgeon. The ear had discharged continually since the operation. The mastoid cavity was a good one, the discharge coming from the tubal end. The patient complained of "nasal catarrh" of five years' duration, following an influenza cold. The nose showed the usual suspicious signs of sinus disease, and proof puncture demonstrated the presence of pus in both antra. After a radical antrum operation, with the intranasal frontal sinus operation and removal of the anterior ethmoidal cells on both sides, the ear condition became quite dry within a month, and has remained so for six months.

CASE III.—*Otitis Media and Antrum Disease.*

Boy, aged 12. Brought with a history of right chronic otitis media, and always catching colds, with nasal discharge of at least five years' duration. He had had the usual treatment for the ear, and within the last two years had had two separate operations for adenoids by different surgeons, the second of whom stating that the adenoids had been insufficiently removed at the first operation.

Without going into details as regards the nose examination, proof puncture yielded positive results on both sides, large stringy plugs being washed out. No adenoids were present. After a double antrum operation the ear dried up completely in about five weeks without any local ear treatment. Both the nose and ear are "dry" six months after the operation and the boy's health is improved in every way.

CASE IV.—*Left Supraorbital Pain, Deviated Septum, and Antrum Disease.*

Boy, aged 15, brought to see if glasses could improve the pain over the left eye. The symptoms, pain and "nasal catarrh," dated for two years. Only a slight amount of hypermetropia and no astigmatism being found, glasses were not advised.

Examination of the nose showed a high deviation of the septum to the left, and proof puncture demonstrated double antrum disease. A resection of the septum and a double antrum operation caused absolute stoppage of the symptoms. This was done twelve months ago, and the boy has remained very well up to now.

Comments.

With regard to Case I, the relation of the nose to lacrymal sac affections has long been a disputed subject. Abnormalities, such as flattening or hypertrophy of the inferior turbinal or deviated septum, which may be found in any normal functioning nose, have been urged by some as causing the eye condition. My own experience is that the presence of dacryocystitis associated with nasal sinusitis is the only definite relationship which is to be found, and this is by no means rare.

There are, of course, very many cases of nasal sinusitis in which the lacrymal sac is not affected, at least, not so grossly affected as to draw the patient's or surgeon's attention to it; but, to make an analogy, one must remember the small proportion of epididymitis in cases of gonorrhoea, or how seldom the parotids are affected in oral sepsis. The fact that the nasal duct opens into the inferior meatus high up under cover of the inferior turbinal, and its peculiar direction from the eye—namely, downwards, outwards, and backwards into the nose—which provides good drainage even in the recumbent posture, may be factors in its immunity from contamination in all cases of nasal sinusitis.

In this case the prevailing organism in culture from the antrum pus and the lacrymal sac pus was the pneumococcus, which is often met with in lacrymal sac affections. Provided the nasal duct is fairly patent—and there are many cases of dacryocystitis, and certainly of commencing epiphora, where this is so—and nasal sinus disease is found to be present, the removal of the latter can reasonably be expected to cure or improve the eye condition. If there is a definite stricture of the duct, then, of course, one must resort to other measures—removal of the sac, or intranasal drainage of the tears.

I have operated on three other cases of a similar nature (dacryocystitis and antrum disease), but nothing like a cure of the dacryocystitis was obtained in any of them, owing to the fact that the nasal duct was either completely or very much obstructed to commence with. Incidentally, a case like the above (also Case IV) helps one to leave, at times, the somewhat narrow grooves of routine ophthalmic work, and to remember that many ophthalmic conditions are merely symptoms of disease of a neighbouring organ, or of a general infection.

With regard to Cases II and III, the relationship of nasal sinus disease to otitis media is well known. It is difficult to be always sure which process commences first, but ultimately a vicious circle is established, and it is important to correct any existent nasal disease before undertaking the mastoid operation, in order to avoid causing disappointment to the patient, who expects a dry ear within a reasonable time after the operation, certainly within six months.

Case III shows the excellent result on the ear disease of attending to nasal sinusitis first; but the chief point regarding Cases III and IV is the age of the patients—12 and 15 years. I find that antrum disease is by no means uncommon in children about this age, or even younger, and a nasal discharge at this time of life is often, and correctly, put down to the presence of adenoids; but if the nasal discharge does not cease within two months of the adenoid operation, a careful examination of the nose will frequently reveal the cause of the trouble in the presence of a deviated septum, or antrum disease, or both combined.

Method of Operation.

This is not the place to discuss the merits of the intranasal and the radical antrum operations. Personally, I always employ the radical method, for many reasons.

As regards the type of operation, the Caldwell-Luc was done in all these cases, the technique employed being that of Dr. W. S. Syme of Glasgow. By this method a better view is obtained of the interior of the antrum, and the vertical incision has many other obvious advantages; moreover, the whole operation can be done with comparative comfort to the patient under local anaesthesia, preceded by a hypodermic of morphine or omnopon. The great advantage of the method is that it is practically bloodless, whether done under local or general anaesthesia.

C. H. MANLOVE (*Philippine Journ. Sci.*, Manila, 1917, xii, Sec. B, 149–163), who records two cases with necropsies, finds that intestinal infection with *Balantidium coli* is not infrequent in the Philippine Islands, and that among 68 cases there were 7 deaths. Associated with *Balantidium coli* there may be catarrhal inflammation or deep burrowing ulceration, and macroscopically these lesions are indistinguishable from those in amoebic dysentery. Microscopically the cellular changes are the same, but the causal organisms can be recognized. In Manlove's cases eosinophilia of the intestinal wall, though emphasized by previous writers, was not prominent. Any part of the colon may be affected. As in amoebiasis, extensive intestinal lesions may be present in balantidiasis without causing symptoms.

INTRAVENOUS SALINE IN BLACKWATER FEVER.

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AN attack of blackwater fever begins often with a rapid rise of temperature, malaise, and sometimes rigor and vomiting. The urine becomes of a port-wine or darker red colour, and shows when collected a copious brown granular precipitate. The amount of urine passed quickly falls off, and within forty-eight hours the symptoms may resemble those of uraemia, with vomiting, headache, and oliguria. The patient's prospects of recovery are to be judged to some extent by the amount of urine passed, and if only a few ounces are secreted in twenty-four hours the outlook is distinctly bad. There is ground for believing that the decrease in the urinary secretion is partly to be accounted for by the deposit of the brown amorphous material in the kidney tubules in such quantity as to obstruct them, or even to block them completely. The febrile condition increases the concentration of the urine, and decrease in the amount of water passing through the kidneys favours the silting-up process in the tubules. Support is given to this view by the finding of brown tube casts in the first specimens of urine passed after the attack begins. These are not of the nature of the casts found in nephritis, but are composed of the brown material excreted with the urine. Their shape shows that they have been formed in the tubules, and it is not unreasonable to suppose that if little water passes through the kidney they may not be washed out at all, but remain in the tubules and block them. If this view is correct one of the most important lines of treatment is to increase diuresis, and the speediest method of doing this is to inject a sodium chloride solution intravenously. This was tried in the following case, and probably saved the patient's life.

J. M., aged 26, had his first attack of subtertian malaria in Macedonia in June, 1917, and suffered from it pretty constantly for the next six months, spending nearly all his time in hospital. He was transferred to a Malta hospital in December, 1917, and when admitted there on December 26th was pale and cachectic. Subtertian parasites (crescents) were found in the blood. He had no pyrexia, and no quinine was given to him.

On January 12th, 1918, he began to feel out of sorts, and on January 13th his temperature was a little elevated. A single dose of quinine sulphate (10 grains) was given by the mouth. In the evening he was shivery, and during the night passed red urine. Next morning (January 14th) the temperature was 104° F., and a blood film showed a few subtertian rings. The urine was red, with a copious brown deposit, but without red blood corpuscles. It was diminished in amount, though not markedly. In the evening the temperature fell to 102.6°.

Next day (January 15th) the highest temperature was 100.2°, but his condition was much worse, and in the evening it looked as though he were going to die. The pulse-rate was 122, in association with a temperature of 100°; the urine had become very scanty and dark red in colour; he vomited frequently and complained of headache. At 10.30 p.m. 1,500 c.cm. of sterilized tap-water, with sodium chloride (1 per cent.) in solution, was injected intravenously. Immediately before this, at the suggestion of Colonel Sir A. Garrod, A.M.S., cups were put on over the kidneys. Within one and a half hours the patient had passed urine which was lighter in colour, and within the twelve hours following the injection he passed 1,100 c.cm. Next morning he was pale and yellowish, but felt much better, and no longer looked like a man who was likely to die. By 5 p.m. of the same day (January 16th) haemoglobin had disappeared from the urine, and he made a rapid and uninterrupted recovery.

The importance of increasing the flow of urine in such cases is urged by the textbooks on tropical medicine, but they generally suggest giving saline solution intracellularly or by the rectum.[1] Evidently what is wanted is a rapid copious passage of water through the renal channels, and this is better obtained by an intravenous than by either a subcutaneous or a rectal injection. It is generally recognized that water injected directly into the circulation is rapidly excreted. This is a disadvantage if the object of the injection is to raise the blood pressure, but it is just what is wanted in a case of blackwater fever such as that just described. Once the tubules become blocked, attempts to promote diuresis may not avail, and therefore it would seem advisable to give the intravenous injection, or injections, before the patient reaches this dangerous stage.

REFERENCES.

[1] Castellani and Chalmers, *Manual of Tropical Medicine* (1919), p. 922; Manson, *Tropical Diseases* (1914), p. 300.

TWO CASES OF ARTIFICIAL PNEUMOTHORAX.

BY

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These cases are reported as typical instances of the effect of artificial pneumothorax, not merely in saving the lives of patients who were in an apparently hopeless condition, but in restoring them to comfortable and useful life.

Case I.

F. H. was admitted to the Newcastle-upon-Tyne and Northumberland Sanatorium on August 30th, 1916. He gave a history of three months' cough with expectoration, night sweats, and one small haemorrhage, together with loss of weight and persistent tiredness. On admission his weight was 9 st. 8½ lb., and he was thin, pale, and languid. There were signs of active disease in the left upper lobe, and tubercle bacilli were present in the sputum. The temperature was found to be slightly elevated, and it remained so for six weeks, when it fell sufficiently low for the patient to get up for very short periods daily. A fortnight later, however, it again rose, and there was further necessity for rest in bed.

This condition of a sort of smouldering temperature, ready to rise above a normal range on the least departure from complete rest in bed, continued until January, 1917, when there was a flare-up, the temperature reaching 102° F., and remaining high for a week. It subsequently settled down to its + or − 99° F. range, and kept the man in bed until March, 1917. In February signs of cavitation in the left upper lobe appeared, and in March haemoptysis was persistent, despite treatment. Although the temperature was not very definitely raised the general condition of the patient now became very poor. There was much sputum, haemoptysis, profuse night sweats, and the weight was down to 9 st. 4½ lb.

The outlook appeared to be very gloomy, and it was decided to attempt to induce an artificial pneumothorax on the left side. On March 29th the left pleural space was found without difficulty, and 300 c.cm. of nitrogen were introduced. There were further introductions of gas on the third, fifth, and fifteenth days, by which time a pressure of +4 to +9 was obtained. Subsequently the temperature fell to a definitely normal range, being well down on an average to 97.4° F. in the mornings and 98.4° F. at nights. Haemoptysis, night sweats, and cough disappeared, and sputum was diminished to a minimum. Graduated exercise was commenced after a fortnight, and by June the patient was up all day, and walking six miles daily with normal temperatures and without fatigue, and the weight had increased to 9st. 13 lb. Before leaving the sanatorium, on July 26th, 1917, he was working daily in the garden.

After the first three introductions of gas, refills were performed on an average every three weeks. The technique employed was that ordinarily in vogue, and no description is necessary. Since his discharge from the sanatorium the patient has continued to come to the Northern Counties Hospital for Diseases of the Chest about once in three weeks for refills.

In December, 1917, physical signs showed the presence of fluid in the pleura. The appearance of this coincided with a slight rise of evening temperature; but this was never higher than 99.6° F., and it returned to normal after four days. The quantity of fluid in the pleura was never large, and it was not thought necessary to draw it off. It was absorbed very gradually, and by the end of May it seemed to have disappeared. While it continued, the capacity of the pleura for air was naturally diminished. In January 350 c.cm. of air was sufficient to raise the mean intrapleural pressure from − 7.5 to + 7. In June the absorption of fluid had so far restored the pleural capacity that 700 c.cm. of air were required to raise the mean pressure from − 8 to + 6.

This patient has now been for a full year doing his work as an inspector in the post-office. Since he left Barrasford he has had no expectoration, and he very rarely coughs. His capacity for exertion continues to increase. This may be taken as a fair illustration of the value of artificial pneumothorax in the treatment of phthisis in conditions presenting but slender chance of relief by ordinary hygienic methods. It is only by the study of individual cases that its value can be fairly appraised. It does not lend itself well to the statistical method. Artificial pneumothorax begins where other forms of treatment leave off in despair. Compare with this case another.

Case II.

Miss R. first came under observation in March, 1915. The clinical aspect of the case was strongly suggestive of tubercle, but physical signs were ill defined and repeated examinations of the sputum gave negative results, until in July, 1917, numerous tubercle bacilli were found, and at the same time diminished resonance and crepitations appeared in the right upper lobe.

The patient went to the country from August 20th to September 15th, and returned with the general condition much improved, but with signs of cavity in the right upper lobe.

On September 29th a pneumothorax was induced on the right side, in the Hospital for Diseases of the Chest.

At the end of November she went to the sanatorium at Barrasford, where the pneumothorax was continued. Since she left the sanatorium in March refills have been done about once in three weeks at the hospital. A very serious complication in this case was a most obstinate diarrhoea which continued during the whole of the time that the patient was in the sanatorium, giving rise to more than a suspicion of tuberculous ulceration of the intestine. This diarrhoea ceased, however, in May of the present year and has never returned. The successful remedy seemed to be a pill of tannic acid gr. 2, pulv. opii gr. ¼, ext. hyoscyam. gr. 1.

A point of great practical importance is that the pill must be coated with keratin, which only dissolves when the intestine is reached. Hence the opium and tannin do not affect the appetite and digestion, their activity being thus suspended until the point is reached where it is most required.

Since the diarrhoea has ceased the patient has greatly improved. She is now doing full work as a managing clerk, and is much less readily fatigued than she used to be. She still has cough and some expectoration, but both are less than they were.

Of course we rejoice with trembling over cases like these. It would be absurd to deny the possibility of relapse—but no treatment of any disease makes the patient immortal. We claim a valuable success if we can secure for our patient a period of useful and comfortable life. If that period is long, the success is a great one; if short, it is still real success. Whether the patient eventually succumbs to a recurrence of the same disease or to some other is a matter of purely academic interest.

FILARIASIS AMONGST AUSTRALIAN TROOPS.

BY

R. RIMMER, Captain R.A.M.C.,

HAVRE.

The following four cases may be of interest, in that their history suggests that they were all infected in the same neighbourhood, indicating some localized centre of infection; to my knowledge, no other cases have been reported amongst the Australian troops.

The first two cases were admitted to this hospital diagnosed filaria, the diagnosis in each case having been given by the man himself. In the one case there was a well-marked lymph scrotum, with an acute attack of lymphangitis at the time of admission. The patient was a middle-aged man (40 to 50), and to his own knowledge had suffered from filariasis for twenty years. The local condition improved with hot fomentations, purgation, and rest in bed. The second case was admitted with haematochyluria and some pain and tenderness over the bladder. In this case the history extended to eight years (1909), when the embryos had been found in the peripheral circulation. In neither of these cases were any embryos found in the blood stream, although repeated examinations were made. This may perhaps be accounted for by the fact that in both cases, at the time of observation, there was present evidence of acute lymphatic obstruction.

The third case was admitted with a diagnosis of nephritis. He said that he had been passing milky urine for two weeks. There was no pain, tenderness, or swelling. The urine was typically chylous; the obstruction seemed to be purely lymphatic. In this case the embryos were fairly numerous in the peripheral circulation, after 9.30 p.m., two or three being present in each small drop, the thin film method of examination being employed.

The fourth case showed only enlarged glands in both groins, most marked on the right; at intervals they became tender and more swollen. The onset was indefinite, the patient, at present 31 years old, having noticed the tender swellings when he was a boy at school. He also complained of a feeling of soreness deep down in the pelvis, and a pain in the lumbar region. There was no history of chyle or blood in the urine, and there have been

no attacks of scrotal lymphangitis. The enlarged glands, which were at first thought to be syphilitic, were present in both groins, and extended from the anterior superior spine of the ilium to the pelvis. The largest were approximately the size of a walnut, uniformly enlarged, and neither hard nor soft in consistency. All glands were discrete and no thickened lymphatic cords could be felt. The patient gave a history of a short attack of pain (twenty-four hours), with swelling and tenderness in the right popliteal space, six weeks before admission, which might have been lymphangitis. Examination of the blood, at midnight, showed the presence of the embryos.

These four men had all lived in middle and southern Queensland for considerable periods. They were unable to tell me that similar cases had occurred in the same neighbourhood. Two of the men had lived in the same town—Maryborough—for some years. In the case last described, the patient stated that he had been in a bad plague of mosquitos some years ago, but as he had noticed the presence of the enlarged glands some years before this, it seems very improbable that this was the time of infection.

It would be interesting to know if there are many cases of filarial infection amongst Australian troops who have lived in Queensland.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

THE ADMINISTRATION OF ANAESTHETICS TO SOLDIERS.

LIKE Dr. Arthur Mills of St. Andrews, all anaesthetists will by now have gained much experience in the administration of anaesthetics to soldiers, and all will doubtless endorse his views (see BRITISH MEDICAL JOURNAL, September 28th, p. 343) in regard to the difficulty of inducing anaesthesia in the cases falling into the first of his two classes—namely, the young, athletic, nervous, hard-smoking type. I am, however, not in agreement with the opinion that chloroform or its mixtures should never be used to induce anaesthesia in these cases. On the contrary, my experience is that it is possible by means of chloroform, or a mixture of one part of chloroform to two of ether, followed by ether alone, to induce anaesthesia safely and quietly, and without that salivation and mucus secretion, so often seen when ether has been employed from the start. In my experience a preliminary hypodermic injection of morphine and atropine is not always necessary; indeed, it is not used as a routine in my cases. It is largely a question of technique. The practice should be to induce slowly, beginning with a vapour so weak that it is not unpleasant to inhale. The object aimed at is gradually to anaesthetize the nerve terminations of the respiratory mucosa, whereafter any strength of vapour can be presented, without intolerance on the part of the patient. Haste invites trouble and is extremely unpleasant for the patient, whose chances of satisfactory recovery are thereby prejudiced. The open inhaler of my design and described in *Anaesthetics in Dental Surgery* (Coleman and Hilliard), may be used, and upon the first sign of excitement or struggling a change should be made to a Carter Braine's modification of Ormsby's inhaler, not overcharged with ether, beginning with the air valve open, when almost immediately the patient passes quietly into deep anaesthesia.

I entirely agree with Dr. Mills that ethyl chloride is, in suitable cases, a most useful preliminary to ether, but I maintain that my method of using Braine's inhaler and continuing with ether in the same apparatus is even more simple than the practice advocated in Dr. Mills's interesting and instructive article.

HARVEY HILLIARD, M.R.C.S., L.R.C.P., D.P.H.,
Lecturer on Anaesthetics, Charing Cross Hospital Medical School, etc.
London, S.W.1.

AN EIGHT MONTHS' EXTRAUTERINE PREGNANCY.

ON the evening of August 13th last I was called to see the patient, a married lady aged 32 years, who was a stranger to me. The history I obtained was that she had had two normal confinements, the last seven years ago. There had been complete amenorrhoea since the end of December, with the exception of a slight brownish discharge in March, which lasted a few days, and at no time was there any expulsion of decidual membrane. In February she went to a doctor, who treated her for colitis. Making no improvement, she consulted someone in May, who informed her that she was three months pregnant. After this she seems to have improved, although she continued to have frequent attacks of abdominal pain.

On my arrival she complained of frequent pains (pseudo-labour) which were very severe, urgent vomiting, and fainting attacks. On examination, the patient lying on her back, the abdomen was rather full and wide, but the anterior abdominal wall was straight, that is, was not pushed forward at any spot. Both flanks were resonant. In the middle line the percussion note was dull from the pubes to a spot midway between the pubes and umbilicus. In the hypogastrium was felt a small ill-defined swelling; the inability to define this swelling was largely, if not entirely, due to the abdominal tenderness. Per vaginam, Douglas's pouch was occupied by a diffuse swelling which felt like placenta. The posterior lip of the cervix was so incorporated into the swelling in Douglas's pouch that only the anterior lip of the cervix could be defined, and this was not soft. The os uteri, which was represented by a transverse slit, was not patulous. Per rectum, the head of the fetus was felt in Douglas's pouch above the mass which vaginally was considered to be placenta.

I may add that the diagnosis was verified by operation on August 15th, which the patient did not survive.

London, W. A. T. NASH, M.D., R.U.I.

A CASE OF STATUS EPILEPTICUS.

STATUS EPILEPTICUS is the climax of epilepsy. In rare instances a patient, the subject of epileptic fits, has a series of fits rapidly following one another, which may last a few hours or a day or two, and never recovers consciousness in the intervals between them. The heart beats rapidly, respirations are quick, twitchings occur in the intervals of the convulsions, the temperature is high, and the patient dies collapsed.

On August 13th I had occasion to examine a man, aged 25, who had been the subject for many years of epileptic fits, and during the examination he had a typical epileptic seizure. The next day I was called to see him at his home, and was informed that he had had several fits during the night, but that there were periods of consciousness between the fits, when he seemed quite normal. Since early morning the fits had become more numerous and severe, without any conscious interval. I found him quite unconscious, slightly cyanosed, with rapid pulse, quickened respirations, and sweating profusely. The temperature was 102.5°. Convulsions would last for about a minute and be followed by relief, save for a few twitchings, but he never regained consciousness. The reflexes were absent, and he frequently passed urine into the bed, but not faeces. Each day he became weaker, and the temperature kept creeping up until, on the morning of August 18th, it was 104.3°. He was extremely collapsed; the abdomen had become distended and tympanitic. He began to vomit faecal matter, and died an hour later.

The case seems to be of interest on account of its rarity, sudden onset, its duration—nearly five days—and in the manner of its close. The patient, previous to August 13th, had enjoyed freedom from fits for four months, but had recently been working hard as a carter, and conceivably this might have been the predisposing cause of his last attack. His bowels were not moved during the illness, and this might have been the cause of the faecal vomiting. As a rule, in status epilepticus the reflexes are absent for a short period after a fit, but soon reappear. In this case they were constantly absent, probably owing to the rapidity with which one convulsion followed the other. Neither the inhalation of amyl nitrite, nor the injection hypodermically of atropine sulphate or hyoscine, seemed to control the convulsions.

Wrexham. A. LLOYD DAVIES, M.B.

MAJOR EUGENE WILSON CALDWELL, of the United States Medical Reserve Corps, who died recently from the results of burns by x rays, left estate valued at more than £30,000 to Columbia University.

Reviews.

ABDOMINAL SURGERY IN WAR.

MAJOR-GENERAL CUTHBERT WALLACE has done well to bring together, in a volume entitled *War Surgery of the Abdomen*,[1] his considered opinions on the treatment of abdominal wounds. Much of what is here said has been published from time to time in the periodical press, but it is advantageous to have it brought together in one volume, for there is, perhaps, no department of surgery in which opinion has changed more during the war. In an introduction the author gives a short sketch of the history of the subject; for many years it had been held, mainly as a consequence of experience in the South African war, that the operative treatment of abdominal wounds was not to be advised under war conditions. The way in which opinion changed is here set out. Though expectant treatment with rest was the rule in the first days, some attempts at operation were made by various surgeons, including Mr. Souttar, then serving with the Belgian army. The first paper containing results of operative treatment in the British army was that published by Colonel Owen Richards in these columns on August 7th, 1915. That the previous results had not been good was no doubt due to the late arrival of the cases at a place where an operation could be performed. In June, 1915, a series of operations and *post-mortem* examinations showed that the injuries were of such a nature that recovery, except in a few instances, was not to be expected without surgical aid. It was also found that haemorrhage was a frequent cause of early death, and that bullets might produce extensive gut injuries. In June, 1915, Surgeon-General W. G. Macpherson directed some of the field ambulances to send the abdominal wounds with all possible celerity to the nearest casualty clearing station; the results were so encouraging that in the first week of August, 1915, an order was given making the rapid collection of abdominal wounds the official method. This o der places great responsibility on the field ambulance officers, but as haemorrhage is the chief cause of early death, and the only hope lies in the arrest of the haemorrhage by surgical means, it is obviously worth while to take risks in cases of abdominal wounds which it would not be right to take in other cases.

In discussing the time factor Major-General Wallace gives a table which shows that the sooner a man is operated upon the better; another important factor is that the patient must be kept quiet and well nursed after operation. Even though it might be possible to operate at the regimental aid post or advanced dressing station, it would be under disadvantageous circumstances, and after-operation nursing as usually understood would be impossible. It followed that the place to operate was either a special operating centre placed between the advanced dressing station and the casualty clearing station, or at the casualty clearing station; the point is made that the time occupied in passing from the advanced dressing station to the casualty clearing station is usually a very small part of the time that elapses between the receipt of the wound and arrival at the casualty clearing station, which should be from 10,000 to 15,000 yards from the line. The French and Belgians went through the same experience as the British, but when the line became fixed operation was their accepted practice also.

In a section on the diagnosis of intraperitoneal damage it is said that experience has shown that great care must be taken in making a negative diagnosis and has proved also the wisdom of operation in doubtful cases. Of the pulse he says that a rapid pulse, a pulse that does not fall, or a rising pulse, is an indication for operation. The pulse often falls with rest and quiet, but "often a falling pulse is more an indication of the possibility of operation than a contraindication to operative measures." In a chapter on the causes of failure, after a reference to the effects of mental and physical strain, attention is particularly directed to haemorrhage, which, the author says, is the great enemy of the surgeon. After speaking of the various sources of haemorrhage and the means which should be taken to arrest it, the subject of septic absorption is considered at length, and, finally, the clinical treatment of shock: "Warmth is the most potent restorative we have."

In enumerating the factors which have led to success in the treatment of abdominal wounds the author mentions four: (1) The magnificent way in which the wounded are collected by the bearers; (2) the way in which the motor ambulances have been handled by the drivers, "who in darkness and shell fire tenderly pick their way among the holes in the road to avoid a needless jolt to their wounded charges"; (3) the fixity of the fighting line, which has allowed the clearing station to develop; and (4) the wisdom of those who administer the R.A.M.C., in that they have abandoned the old tradition that operations cannot be performed near a fighting area. The question then arises whether as good results can be maintained in open fighting with armies on the move; motor ambulances, it is said, "can diminish distance, but cannot entirely obliterate it"; all will depend on whether the casualty clearing station can be moved sufficient quickly.

Nothing could be more timely than the provision of a careful analysis and explanation of statistics by one who has seen the whole of them in the making, and the book will certainly be studied with the greatest profit by all who have to operate for gunshot wounds of the abdomen. The tables of figures are themselves very interesting, and not least so for the remarkable uniformity and consistency often to be observed; but their value is enhanced by the guidance deduced from them both for diagnosis and for treatment, using treatment in the broad sense of the term as well as the particular sense of what to do at the operation. Dedication of the book to "the stretcher-bearer" drives home the paramount importance of early operation, and prepares the reader for finding "haemorrhage" accounted the most serious cause of failure. If any proof were needed that the policy of "look and see" is safer than "wait and see," these pages would afford it.

A wide circle of readers will appreciate the labour that has gone to the preparation of this indispensable volume, and the large share of credit due to the author and his fellow consultants for the bright side of the picture displayed.

[1] *War Surgery of the Abdomen.* By Cuthbert Wallace, C.M.G., F.R.C.S., etc. London: J. and A. Churchill. (Med. 8vo, pp. viii + 152; 25 figures. 10s. 6d. net.)

CHEMICAL PATHOLOGY.

WELLS'S *Chemical Pathology*,[2] originally issued in 1907, passed into a second edition in 1914, and now, in its third edition, has attained a pre-eminent position as a standard book of reference, as it gives a complete though succinct summary of present knowledge with constant indications as to original papers of value. The entire volume has been reprinted since the last edition, as, in spite of the war, a large amount of new work has appeared and been critically incorporated; several sections, such as those on anaphylaxis, jaundice, and acidosis, have been rewritten, and new articles on the Abderhalden reaction, specificity, the chemical basis of growth, atrophy, and the pressor bases have been added. The Abderhalden reaction, first introduced for the diagnosis of pregnancy and extensively used clinically for this purpose, is fundamentally the same as the anaphylaxis reactions, and rests on the principle that in pregnancy the chorionic cells of the placenta enter the maternal circulation, and as foreign proteins cause the formation of specific defensive ferments; in fact, it differs from other reactions of this class merely in that the methods used for determining the proteolysis are chemical instead of biological. There are many sources of error in the technique, and so many careful and experienced workers have found the original method to give absolutely non-specific and hopelessly paradoxical results, that its diagnostic value for either clinical or scientific purposes must be considered at present to be unproved. The subject of immunity is philosophically discussed, and much attention is naturally paid to the problems of ferments—a branch of medical research in which the author has played an important part. The chapter on the chemistry of diabetes is again contributed by Dr. R. T. Woodyatt, the discussion of diabetic coma being included in the account of acid intoxication in another part of the volume, where

[2] *Chemical Pathology.* By H. Gideon Wells, Ph.D., M.D., Professor of Pathology in the University of Chicago and in Rush Medical College. Third Edition, revised and reset. Philadelphia and London: W. B. Saunders Co. 1918. (Pp. 707. 19s.)

a good deal of recent American work has been added. The existence of the opposite condition, "alkalosis," unless it occurs in parathyroid tetany, has not justified its claim to definite recognition.

The clear, and at the same time condensed, manner in which the rather difficult subject matter is treated is admirable, and the present edition fully maintains the high standard and reputation of its predecessors.

NOTES ON BOOKS.

DR. RUTHERFORD DARLING, assistant surgeon to the South Sydney Hospital, setting out to write a handbook on preventive nursing in accordance with the syllabus laid down for the final examination of the Australian Trained Nurses' Association, has produced a book, *Elementary Hygiene for Nurses*,[3] which not only fulfils this purpose, but is also likely to be of use to students and junior members of the medical profession who are not seeking a diploma in public health. He deals in succession with ventilation, food, the sanitation of buildings, water, sewage, the prevention of infectious diseases, parasites, and personal hygiene. There are a number of illustrations, many o them familiar, but well selected, and a good index.

[3] *Elementary Hygiene for Nurses.* By H. C. Rutherford Darling, M.D., M.S.Lond., F.R.C.S.Eng., F.R.F.P.S.Glasg. London: J. and A. Churchill. 1917. (Crown 8vo, pp. viii + 152; 13 figures. 3s.)

VENEREAL DISEASE AND WASTE OF MAN POWER.

THE War Cabinet has considered the objections made in many quarters to No. 40 D of the Defence of the Realm Regulations, and has issued a Memorandum maintaining the regulation, but announcing the appointment of a committee to report to it on the subject.

The regulation is as follows:

No woman who is suffering from venereal disease in a communicable form shall have sexual intercourse with any member of H.M. Forces or any of H.M. Allies, or solicit or invite any member of H.M. Forces or of the Forces of any of H.M. Allies to have sexual intercourse with her.

If any woman acts in contravention of this regulation she shall be guilty of a summary offence against these regulations.

A woman charged with an offence under this regulation shall, if she so requires, be remanded for a period (not less than a week) for the purpose of such medical examination as may be requisite for ascertaining whether she is suffering from such a disease as aforesaid.

The defendant shall be informed of her right to be remanded as aforesaid, and that she may be examined by her own doctor or by the medical officer of the prison.

In this regulation the expression "venereal disease" means syphilis, gonorrhoea, or soft chancre.

The Memorandum is as follows:

"The Regulation was founded on information showing that the spread of venereal disease in the British and Colonial forces involved a serious loss of man power for war purposes. Up to the end of August seventy-eight persons had been convicted of breaches of the Regulation, thirty-seven of them having pleaded guilty; and it is stated that the removal for a time of these centres of infection and the deterrent effect of the Regulation on others has already resulted in a diminution of venereal disease in some army districts. The United States authorities have asked that the Regulation shall be extended so as to apply to their troops in this country, and the Governments of Canada and New Zealand have made similar Regulations for the protection of their troops in the Dominions. In these circumstances the Cabinet have decided that the Regulation must for the present be retained. They have, however, decided that a small committee shall be appointed to consider it, and what modifications (if any) should be made in its terms or in the procedure for enforcing it, and to report their conclusions as soon as possible, and in any case within two months."

The committee will consist of Lord Moulton, G.B.E., K.C.B., F.R.S. (Chairman), Mrs. Found, Mrs. H. B. Irving, Lieutenant-General Sir Francis Lloyd, G.C.V.O., K.C.B., D.S.O., Sir Malcolm Morris, K.C.V.O., F.R.C.S., Miss Flora Murray, C.B.E., M.D., and the Bishop of Southwark, D.D. The secretary of the committee is Mr. Archibald J. Allen, and any communication on the subject of the inquiry should be sent to him at 4, Cottesmore Gardens, Kensington, W. 8.

A MOVEMENT has been started by the clinical society of Havana to establish in Cuba a school of preventive medicine to train men who wish to devote themselves to sanitary work, and especially to give them a knowledge of tropical diseases.

PARLIAMENTARY REPRESENTATION.*

BY

N. BISHOP HARMAN, F.R.C.S.

BIRMINGHAM has played so large a part in the parliamentary life of our country in recent years that a visit to Birmingham for the purpose of addressing Birmingham men on parliamentary representation is of special interest. I thank you, Mr. Chairman, and your Executive Committee for the honour you have done me in asking me to visit you for this purpose.

Our profession is just now profoundly exercised as to how it can best play its right and proper part in the councils of the nation. Not that it has failed to play its rightful part in the past. It has done its part and still does, and with an ever-increasing success, in the very homes of the people. The doctor has always been, even in the days of least light and learning, somewhat of a missionary; he has never failed to bear witness to an ideal of health; he comes to heal the sick and stays to guide the feet of the restored into the ways of right living. That work will remain to us always. It is a great responsibility, and one which I believe our profession will never fail in attempting. But in these days something more than that is needed. Life has become so highly organized that there is need for a corresponding increase in the organized expression of the needs of the community. The genius of our race has chosen that the expression of national needs and aspirations shall be made through a Parliament, through the living voices of our own representatives in that Parliament. We are not content to be ruled by a selected governing class or by the pundits of government departments. There are great and good men amongst these, indispensable to the life of the nation; but we believe that the initiative and the final determination of action must be in the corporate representation of the common sense of the nation as it is beaten out in parliamentary debate and vote. That initiative is ever being renewed; it cannot grow stale; and as a final determinant it is human and devoid of the obstinacy of officialdom. In these points Parliament, with all its human faultiness, is better than the best of autocracies or bureaucracies.

Parliament in its essence is a family gathering. Our constitutionalists trace its dim origins to the gathering of the elders, as in the Saxon Witanagemote. In such gatherings a representative stood for his family, but also for the particular virtue with which he as a man was gifted. In our modern Parliament the members are the representatives of constituencies or territorial divisions; each stands for his own place in the great assembly, but each can and should bring into the common council some special virtue which is his as a man. It is of interest to note that in the first Parliament, that of Simon de Montfort, there was a definite recognition of occupational representation as well as of territorial division. Earls, barons, clergy, knights of shires, and the burgesses of the cities were called, and the last two as representatives of agriculture and commerce. In our modern Parliament the necessary organization of voting on territorial lines has overlain this occupational principle, but for all that there has never been found wanting men who possess a special virtue of their own as men of affairs, of commerce, of law, of education, of science, and of medicine. But of these last there have been too few. It is to consider the possibility of supplying this lack in the national council that we are met here to-day.

Of the need for more men in Parliament able to give a considered and first hand opinion on matters relating to national health and medical work I have no manner of doubt. For the past three years I have been the chairman of the Parliamentary Subcommittee of the Association, and in the course of my duties have done not a little "lobbying" in the House. And whilst I would gladly acknowledge the courtesy and ready responsiveness of members of Parliament, both medical and lay, to applications for help, and to their willingness to understand and give weight to information my committee had to put at their disposal, yet there is left in my mind no doubt that an advocacy of a medical position or argument at second

* An address delivered to the Central Division of the British Medical Association, Birmingham, October 3rd, 1918.

hand is never and can never be so effective in an assembly like the House, or in its committees, as the plain statement of the man who knows personally of what he speaks. When, as occasionally happens, there is a doctor in the House who can "speak as one with authority" there is no uncertainty in the response, but too often we have to be content with the good offices of the "scribes." That brings me to the question before you. How are we to remedy this state of affairs?

Early this year, by resolution of the Central Council of the Association, this matter was the subject of investigation of the Parliamentary Subcommittee. Inquiry was made of the Divisions of the Association; the replies thereto showed a fairly equal balance of opinion, so that the matter was brought before the Representative Body for full discussion. That body, meeting in July last, instructed the Council to take action. The definiteness of the instruction given will be realized best by quoting the words of the resolution:

> That the time has arrived when the medical profession should be more fully represented in the House of Commons; that to this end financial aid should be provided when necessary for candidates approved by the British Medical Association, from funds specially collected by it for this purpose; and that the Council is hereby instructed to take such action as may best conduce to the attainment of this object.

On the same day as the Council received these instructions it appointed an *ad hoc* committee with a wider and more numerous representation than the subcommittee which had begun the work of investigation. That committee—the Parliamentary Elections Committee—has formulated a plan of campaign, and it is to consider this plan, and the principles laid down therein, and to give effect to these plans, that you are called to this meeting.

A Voluntary Fund.

The first of the recommendations is:

> That a voluntary fund for the support of the parliamentary candidature of medical men should be established with the following objects:
>
> To ensure the presentation to Parliament of expert medical opinion on matters relating to national health or involving the welfare of the medical profession, and for this purpose to secure a larger representation of the medical profession in Parliament by obtaining suitable medical candidates for Parliament and suitable constituencies, and assisting, when necessary, by monetary grants such candidates, irrespective of political party.

Let us take the several items of this recommendation seriatim:

Item 1.—The fund shall be voluntary. The remembrance of the Osborne judgement is with you all; that judgement made it illegal for unions or associations established for certain definite purposes to divert any part of their funds to the support of political candidatures. Any fund that we promote must therefore be voluntary and independent of the finances of our Association.

Item 2.—The primary object of the establishment of the fund is to ensure that Parliament shall have the benefit of expert medical opinion.

Item 3 states how this desire is to be realized. The intention is to follow the constitutional practice of securing men of parts as candidates for constituencies. Men who are not only desirous and capable of fully representing the electors who may send them into Parliament, but who have also a special virtue as part of their mentality and equipment, and this virtue is for them an expert knowledge of the problems of national health and of our profession.

Item 4 states how we are to help these men. We are to seek them out, we are to find constituencies willing to adopt them, we are to aid them in that heavy toll which the nation takes of its representatives—election expenses.

Item 5 states that in doing all this we are to ignore the particular political badge or colour of the medical men we seek to aid.

Now, Sir, someone may ask, Why all these items and definitions? My answer is that when we desire concerted action in such a field as this—one in which the fiercest passions and rivalries are aroused—it is well to make plain our proposals, so that everyone may understand, and that there may be no likelihood of confusion at the critical moment of action.

The "Signs" of a Good Candidate.

The next recommendation of the committee which I would draw your attention to is that which sets out the character of those candidates we desire to find and assist. The clause reads:

> That the condition of approval of the Association of the candidature of any medical man for a parliamentary seat be as follows:
>
> That he should, by his past work and experience, have proved his knowledge of, and loyalty to, the interests of the profession as expressed through the British Medical Association.

That provision shows that we are out for real workers—men who have proved themselves. I do not know much about horse racing, but I have heard that the skill of the tipster lies in his ability to find out and recollect the doings of every horse in the stud calendar; the promise of performance of any particular horse is to him expressed in its past doings. That is our attitude to our professional colleagues whom we desire to help. We do not want any promises from them, we neither ask nor desire pledges, but we want to know our man, and on that knowledge we can determine our aid. But there is more in this provision than meets the eye. We want men who are capable of giving good service, and in our experience this can best be obtained by choosing men who have shown keenness in the past, who have done the "donkey work" of their profession through this Association, men who are known to have insight into their own and our problems, quick in the uptake, capable of making a plain and intelligible statement of a complicated position.

The regular work of a doctor, no matter what may be his type of practice, does not readily secure all these characteristics for a man, but if he has taken part in the affairs of the Association he will have gone far to attain them. In this, if alone, the work of our Association has been of inestimable value to our profession and to the nation. It has trained our doctors in the conduct of public affairs, to the great gain of not a few municipal councils, and we hope now also to Parliament. It is commonly said that the doctor is a bad business man. That is a popular mistake, due to his slackness in sending in his bills. The business that he puts his mind to prospers at his hands, from the curing of his patients to the affairs of the country. Let me cite to you the work of the Central Medical War Committee. That work began with a very humble committee of the Association; it is now a Statutory Medical Tribunal; and it has become the pattern for other professional tribunals, such as those for the dentists and the veterinary surgeons. Better testimony to the business capacity of doctors could not be wished.

In the two provisions I have quoted lie our whole plan. The provision of a fund, and the choice of men. The rest—the finding of constituencies, arrangements with party whips and secretaries—are matters of detail and routine which follow out of these provisions; in such details no matter of principle is involved.

But perhaps you may ask for a word on the political side of such arrangements. What is to become of a man's political convictions? They will be as they are. Unless he has these, and has them pretty strongly, he will be no candidate for Parliament, and no use to us. There is no such thing possible, or likely to be possible, as a "medical candidate." We shall never see on the hustings—"Vote for Dr. Dash the Doctors' Delegate."

A candidate must stand as a citizen and seek the suffrages of his fellow citizens. Party government suits the genius of our people, and in normal times it seems likely to prevail; therefore a candidate must be a party man. The days of the independent are few and evil. But whilst we recognize these commonplace facts there is no need for us to take them into our consideration when we come to the aid of candidates who have for us a special virtue in that they are medical men. In this matter of party sentiment we are neither interested nor hostile; we are *indifferent*. That is the only safe and satisfactory attitude.

The issue is before you. Do you want men in Parliament who can speak with authority on health and professional matters? Are you prepared to ask them to make sacrifices, great sacrifices, to do this work? Are you prepared to respond by making sacrifices yourselves, quite small sacrifices, to back them up and ensure success in their labours?

British Medical Journal.

SATURDAY, OCTOBER 12TH, 1918.

HOUSING AND HEALTH.

THE Prime Minister, speaking at Manchester, dealt at considerable length with the nation's health, taking as his text the results of the physical census of the Ministry of National Service, to which we called attention a fortnight ago. His first remedy was better housing, and we entirely sympathize with his despair in the face of Acts of Parliament running into hundreds of sections, and regulations which would fill a library. We have on many occasions dwelt on the failure of the Housing Acts, and reproached the House of Commons for its inability to produce an effective body of law. We therefore very sincerely welcome the Prime Minister's declaration that "you cannot sweep away slums with paper and cannot cope with the wants of the people with red tape." He said also that the next thing that we need, after housing, is "a more intelligent organization of the forces which have special charge of the health of the nation—national, municipal, and medical." So far, of course, every one will agree, things might be much better; but with his next sentence we feel bound to quarrel. He said: "I doubt if there is a first-rate country in the world where less has been done." As a stimulus to greater effort such a statement may pass, but there is a danger that, taken alone, it may convey to many people a promise that if we organize our forces upon some foreign model we shall, by reason of this organization, ensure results for the health and better physical development of the people, and for the prevention of disease, which cannot, in fact, be attained without a whole-hearted determination by the Government and by Parliament to set the housing question on the right lines and to push on to a solution. Mr. Hayes Fisher was constrained to confess that the Board over which he presides had been playing with it too long, and was not proud of its achievements in Parliament.

Mr. Lloyd George, in speaking of the two matters of housing and better administrative organization in the same breath, may have conveyed the impression to some that he regarded them of equal importance. This we are sure was far from his intention; he mentioned them together, no doubt, because both are matters of immediate political interest. On the one hand he had in mind the plans now on foot for the erection of houses by local authorities with the assistance of a Government grant to cover three-fourths of the prime expenditure, and on the other the bill for a Ministry of Health, which, as was mentioned last week, has been sent to the War Cabinet by the Cabinet Committee for Home Affairs.

It is estimated that 300,000 new houses will be required in England and Wales after the war, and that local authorities already have schemes to provide 250,000. The President of the Local Government Board told a deputation on October 4th that if local authorities had not sufficient power to get land they must be given it. Financial aid is to be given not only to the local authorities but also to public utility societies, and the large boroughs as well as the county councils are to have power to take shares in such companies. The deputation was sent jointly by the Federation of British Industries and the National Alliance of Employers and Employed, bodies which it was stated represented 16,000 firms, and trade union members numbering a million and a half. The employers appear willing to find a considerable amount of capital if they receive for their schemes the same financial assistance as is to be given to local authorities. Objection is felt to any scheme for the provision of the needed houses by the employers direct, on the ground that it would accentuate the bitterness of labour troubles if the employers controlled a man's house as well as his employment. This objection would not lie against public utility societies under proper management.

The houses to be built must fulfil certain conditions; model plans have been circulated by Government, and the Royal Institute of British Architects is publishing designs from local competitions; diversity is to be encouraged and local architects employed, but the conditions laid down are intended to ensure houses so designed and constructed that their inhabitants may find it easy to observe the fundamental laws of hygiene. If this end be achieved, the disappearance of private enterprise will cause no regret, for hitherto much of the time and energy of the sanitary authorities of towns have been spent in trying to make healthy dwellings out of houses built at the lowest possible cost by speculative builders in a hurry to turn over their money.

The real promise for the future is in a wise housing policy vigorously administered. So long as this is recognized, and so long as trust is not placed in mere reorganization of machinery, we may welcome the promise of a Ministry of Health, helped by expert advisory councils and endowed with will and power to strike at the roots of ill health and deterioration, which are bad housing in town and insanitary surroundings of houses in the country.

THE ETIOLOGY OF RICKETS.

THE Medical Research Committee has issued a report on the social and economic factors in the causation of rickets,[1] based on work carried out in Glasgow by Miss Margaret Ferguson under the direction of Professor Noël Paton and Dr. Leonard Findlay.

In an introductory historical survey Dr. Leonard Findlay notes that the disease was apparently very prevalent in ancient Rome, where it was observed by Soranus Ephesius about 100 A.D., who believed that its true cause was to be found "in inexperience with regard to the rearing of children." Dr. Findlay does justice to Glisson's great treatise (1650), and goes on to set out the main facts and theories concerning the geographical distribution, etiology, and pathological anatomy of the disease, and to pay particular attention to the metabolism of calcium in it, a subject which has aroused a considerable amount of interest in recent years.

The main portion of the report is concerned with the investigation of the social, economic, and dietetic conditions of families containing rickety children. In order to control the results the same factors were studied in a series of families of the same social scale but in which no rickety children were discovered, and

[1] A Study of Social and Economic Factors in the Causation of Rickets. Medical Research Committee, Special Report Series No. 20. London: H.M. Stationery Office. To be obtained through any bookseller. (Price 2s., or 2s. 2d. post free.)

in a number of families resident in the garden cities of Bournville and Port Sunlight. In all 200 families containing children with marked rickets, 150 with mild cases, 100 with apparently healed rickets, 200 families of non-rickety children, 50 families in Port Sunlight, and 55 families in Bournville were studied.

The general conclusion that rickets is to be prevented only by the improvement of housing conditions was reached after other factors had been carefully considered and eliminated. For example, the evidence is held to establish the proposition that the origin of parents, whether country or town bred, has no influence on the incidence of rickets in the children, and that the state of health of the mother is a contributory factor in the development of rickets in the child only in so far as it affects maternal care, or is an index of the conditions under which the child lives. On the other hand, the habits of the mother and the care taken of the children were found to have a marked effect, whereas any influence the health and habits of the father may have is to be attributed merely to the manner in which they modify the social conditions under which the children are reared. It was found that something like 50 per cent. of children of the poorer classes in the city of Glasgow are affected with rickets, and that the disease was slightly more prevalent among males than among females. The most frequent age of incidence of rickets appeared to be between 6 and 18 months, and the disorder generally developed in late winter and spring. The close association of tetany with rickets is shown by the fact that 42 per cent. of the rickety children had suffered from tetany, whereas it was not observed in any of the non-rickety children. Diarrhoea had occurred in 33 per cent. of the rickety children prior to the commencement of the disease, while only 11 per cent. of the non-rickety children had so suffered. The duration of breast feeding was not proved to have any relation to the incidence of the disease; the age at which artificial feeding was commenced appeared to be of little moment, and diets of the rickety and non-rickety families showed no significant difference in energy value or protein content. The majority of cases of both rickety and non-rickety children seemed to have had an adequate supply of fat during infancy; though the amount of fat in the diets of non-rickety families was on an average 10.7 per cent. higher than in the diets of the rickety, the overlap was so great that a defective supply of fat is not considered to play an essential part in the causation of rickets. The evidence was against a deficiency of milk, of butter, or of the fat-soluble A substance being a determining factor. On the other hand, inadequate air and exercise seemed to be potent factors in determining the onset of the disease. The probability that rickets will occur was found to increase with the number of children in the family, and usually several of a family were affected. Although they lived in the same districts the social conditions of the non-rickety families were better than those of the rickety, but the district of the city in which the child dwelt had not so great an influence on the development of rickets as the actual conditions of the home. For example, the average number of persons to a room was almost one person greater in the rickety than in the non-rickety families; the cubic space for each person was 32 per cent. less in the families with cases of marked rickets than in families free from the disease, and the house was distinctly cleaner in the non-rickety than in the rickety families. Rickets was found to be very uncommon in the garden cities of Bournville and Port Sunlight.

In a general discussion by Professor D. Noël Paton and Dr. Leonard Findlay, with which the report concludes, attention is focussed on various facts discovered or supported by the inquiry and on points in the pathological anatomy and chemistry requiring further research. The final conclusion is that whatever the true cause of rickets, improper housing, absence of facilities for open-air life, and imperfect parental care favour the onset of the disease, and that by improving the housing conditions the disappearance of the disease would be brought about.

THE NEED FOR DOCTORS IN THE ARMY.

Owing to the course of events in France and the nature of the present fighting, there is again an urgent demand for medical men to serve in the R.A.M.C. The most pressing need is stated to be for the next few months. The position has been carefully considered by the Central Medical War Committee, and various emergency methods have been passed under review. Of the plans proposed the Committee has found that only two afford any hope of producing the young and fit medical officers required within the next two months. The first of these was to call upon men of Grade 1 under the age of 46 who have recently resigned their commissions to rejoin the R.A.M.C. These men have, of course, their right of appeal to the medical tribunal for exemption. The machinery of the Committee is being quickened in every possible way in order that all men in this category who are available for service again may be in France by the beginning of November. The second method is to call up for immediate service those medical men whose applications for exemption have been refused, but whose removal from civilian practice cannot be effected without some form of substitution. For this purpose a method is under consideration by which rapid substitution may possibly be brought about. The Scottish Medical Service Emergency Committee is understood to be reviewing the work of all medical men practising in Scotland, and to have decided to set free for the army every man who can be spared, after due consideration of the civilian necessities. For the immediate emergency a plan for employing surgeon probationers in the R.A.M.C. for a limited number of months before qualification has been proposed, but there are serious objections to this scheme. In the first place, it is by no means certain that it can be put into effective working order in time to be of use during the present military operations. In the second place, it would be to reap our corn in the blade. It may be that we are nearing the end of the war, but it would be rash indeed to assume that the army will not want medical men to replace wastage after the winter. Foresight is necessary, and we believe it may be wiser to retain these young men in the schools until they can qualify. It is possible, of course, that the corporations and universities may be able to make special arrangements for early examinations. The demand made by the army has not this time been sprung upon the Ministry of National Service; it dates from the British defeats at the end of March. The demand then made has never been adequately met. Many medical officers were made prisoners then, and week by week the army in France has lost medical officers—killed, invalided, or time expired. We have no doubt that the medical department of the Ministry of National Service is in close consultation with the War Office on the one hand, and with the medical war committees on the other, but we would plead for long views. The present emergency must be met without endangering the future, which no man can foresee. The action taken by the Irish Medical War Committee is fully reported in another column of our present issue, and we cannot doubt that the appeal it makes will meet with a satisfactory response.

"ALL OUT."

"THE night had been stormy, making the assembly of the troops difficult, and the assault was launched in a steady downpour of rain. As the attack progressed the weather cleared, favouring the development of operations which, from the first, were completely successful." These words, from Sir Douglas Haig's communiqué of Tuesday evening, will bring to the mind of those who know the country a picture of the sufferings to which the wounded have been subjected, and the difficulties under which the Army Medical Service has carried on its work. The advances are being made through upland downs exposed to every storm; it can never have been a country of many resources, and everything has been destroyed by the retreating foe. Villages are so utterly devastated that the traveller only knows their place by an English placard, "This is ——," stuck into a heap of bricks, and reflects that the tense is wrong. Everything must be carried into such a country, not only the tents or huts of casualty clearing stations, but everything they use, from food to the means of warmth. Cold is the great enemy of the badly wounded man, and by hook or by crook means of warming him have been provided in the main dressing stations of ambulances, as well as in the casualty clearing stations. What was happening between St. Quentin and Cambrai on Tuesday has been happening all along the front. All British armies have been heavily engaged within the last fortnight, and this fact has a material influence in increasing the strain on the Army Medical Service. It renders it impossible for an army actively fighting to borrow personnel or material from some other army not so occupied, for all are fighting. Consequently each must retain its surgical teams, which used to be lent from one casualty clearing station to another; and, with a number of wounded larger than the casualty clearing stations are able themselves to treat fully, the stream of men going to the base and there requiring surgical treatment must render it difficult to spare teams to be sent from the base towards the front. There is no doubt that the work will be done and done well, but we are convinced that never since the earliest days of the war has the Army Medical Service been tried so high.

BACILLARY DYSENTERY ON THE BELGIAN FRONT.

THE prophecy at the beginning of the war, based on the experience of former campaigns, that acute dysentery would attack the combatants on the Western front, was not fulfilled for some time, and even now not to the extent that was probably anticipated. The recent article by Nolf, Colard, Dulière, and Roskam[1] in the sole surviving medical periodical of Belgium shows that during 1915 and 1916 the Belgian troops suffered little from bacillary dysentery, but that during the last five months of 1917 there was an epidemic which reached its acme in the middle of September and the first half of October and then died down with the fall of the temperature and the disappearance of the flies, which it was thought had spread the infection. The authors treated 1,200 cases among the troops and found that the great majority were due to infection with the Flexner or the Y strains of the dysentery bacillus, 12 only out of 1,044 positive agglutination reactions pointing exclusively to Shiga infection. Many French observers have insisted that the severe cases of bacillary dysentery are usually due to infection with Shiga's strain, but among the fourteen specially bad cases described by the Belgian observers two only were due to *Bacillus dysenteriae* Shiga; on the other hand, the low mortality of 0.25 per cent. may be correlated with the predominance of the Flexner and Y strains. Most of the cases were slight or mild and recovered rapidly under treatment, but the severe cases were characterized by the rapid changes that occurred in their clinical state; from profuse vomiting and copious intestinal discharges the tissues may become so drained of fluid that collapse, cyanosis, and muscular cramps on the slightest exertion —a condition recalling that in cholera—supervened. The intravenous injection of saline solution gave temporary relief only—a result which quite fits in with Professor Bayliss's observation that saline solution thus introduced soon leaves the vessels. Injection subcutaneously or intravenously of the Pasteur Institute's multivalent anti-dysenteric serum in amounts up to a total of 400 c.cm. was not followed by any very striking benefit, nor was the intravenous injection of peptone, which, as mentioned in the article on protein shock therapy in our issue of June 1st (p. 624, where the word proteose is spelt protease), has given good results in enteric fever. The Belgian physicians appear to have relied more on half-grain doses of calomel every hour for twelve hours on three successive days after castor oil on the day of admission.

[1] P. Nolf, A. Colard, A. Dulière, et J. Roskam: *Arch. méd. belges*, Paris, 1918, lxxi, 521-539.

ENDOCRINE ORIGIN OF MUSCULAR DYSTROPHY.

Two recent papers by workers previously known in connexion with the metabolic investigation of this problem both conclude that hypoglycaemia due to disturbance of the ductless glands is the cause of muscular dystrophy. McCrudden,[1] who gives a summary of the available data, decides that the myasthenia of progressive muscular dystrophy is due to hypoglycaemia, which together with the fatty infiltration depends on impaired glycogenesis, the carbohydrate of the food being probably changed largely into fat instead of glycogen, and that this impaired glycogenesis is the result of disease of the adrenals or other endocrine glands. A more extensive article by Janney, Goodhart, and Isaacson,[2] contains, in addition to a critical review of the subject, the details of the observations on the metabolism of nine cases of muscular dystrophy, the patients being supplied with a creatinine-creatine-free diet from a special kitchen and kept in separate rooms under constant supervision by nurses trained in metabolic work. These patients showed a disturbance in the creatinine-creatine metabolism; the urinary creatinine was diminished in all the cases and was usually reduced in proportion to the severity of the cases; moderate amounts of creatine, which is not normally present, in the urine were found in all the cases, and in eight out of the nine cases the quantity of creatine exceeded that of creatinine. There was also constant hypoglycaemia with impaired utilization of carbohydrates, or essentially the same metabolic picture as that recorded in myxoedema, hypopituitarism, and Addison's disease, which are undoubtedly due to insufficiency of the ductless glands, and in animals after experimental removal of the thyroid or adrenals. Nearly all the patients gave skiagraphic evidence of bony changes, which the authors contend are not necessarily due to disuse, and other manifestations of disturbances of the ductless glands, such as pigmentation and dryness of the skin, hypertrichosis, unusual distribution of the subcutaneous fat, and both hypertrophy and arrested development of the genitals, were noted. Hypothyroidism was the most prominent condition, but the pituitary was unquestionably affected in one case, and the pineal possibly in two others. The conclusion drawn is that muscular dystrophy may in reality be only a symptom-group due to deficient function, not of one but of several endocrine glands separately or coincidently affected. This endocrine failure causes hypoglycaemia, and from the consequent interference with their normal carbohydrate supply the muscles weaken, atrophy and degenerate, and creatine appears in the urine, while the excretion of creatinine diminishes. In this connexion it is significant that the creatinine-creatine metabolism of muscular dystrophy closely resembles that

[1] F. H. McCrudden: *Arch. Int. Med.*, Chicago, 1918, xxi, 256-262.
[2] N. W. Janney, S. P. Goodhart, and V. I. Isaacson: Ibid., 188-215.

of fasting, but even in prolonged starvation the sugar in the blood is maintained at the usual level, thus showing its vital importance; hypoglycaemia would therefore reasonably be expected to give rise to excessive muscular wasting.

MENINGITIS IN THE NEWBORN AND IN EARLY INFANCY.

Although common in childhood, meningitis is very rare in the newborn and in early infancy and then differs in its etiology. In Holt's series of 300 cases of meningitis in infants and young children only 1 per cent. were in infants under 3 months of age, and he concludes that 55 to 70 per cent. are tuberculous in origin, and that no cases of meningitis due to *Bacillus coli* occur in children over 6 months of age. On the other hand, among 19 collected cases of meningitis occurring in the newborn, Barron[1] found that 7 were due to *B. coli*, 6 to staphylococci and streptococci almost always depending on infection of a spina bifida, 2 to pneumococci, and one each to the meningococcus, *B. lactis aërogenes*, and *B. pyocyaneus*. Adding 20 cases of meningitis in infants under 3 months and 3 cases in infants between 3 and 5 months Barron finds that *B. coli* was responsible for 14 cases, streptococci and staphylococci for 10, the meningococcus for 5, the pneumococcus for 4, and the tubercle bacillus for 3. The important part that the tubercle bacillus plays in the meningitis of later infancy is therefore occupied by *B. coli* in the early months of infant life. The paths of infection in the newborn have not been definitely established, but infection through the mouth by means of fingers, instruments, and bath water must be guarded against; bacteria may also enter through the alimentary canal, the external ear, and the Eustachian tube. The susceptibility of infants to infections with micro-organisms otherwise only slightly pathogenic may be explained by the feeble production of antibodies during the early months of infancy. The greater resistance of breast-fed infants as compared with those artificially fed is probably due to the compensation of the passive immunization by the breast milk for the active immunization which is still deficient.

A ROMAN TEST OF WATER HARDNESS.

The Romans attached particular importance to the quality of water for drinking, and they preferred soft water to hard. The springs chosen by them for watering troops, as shown by archaeological research, were always those containing the smallest proportion of mineral substances in solution. They were familiar with the toughening effects of hard water when employed for cooking vegetables, but apart from this culinary test they had recourse to another quasi-chemical method of estimating the degree of hardness. Hippocrates had pointed out that soft water is to be distinguished from hard "indigestible" water by the fact that it is tinted by very small amounts of red wine. When a little wine is added to water, the colour is lost in proportion to the richness of the water in alkaline salts. The test is applied by adding the wine drop by drop to a given quantity of water in a recipient with a white bottom, the number of drops required to tinge the water red being noted. A deep red wine must be used for this purpose, as the sensitiveness of the colouring agents varies very greatly among the lighter wines. Dealing with 100 c.cm. of water the number of drops varies from 1 or 2 to from 30 to 35. Dr. Arnold Gautier has shown that the colouring matter of wine is due to tinted oenotannins, pigments which are more sensitive to alkaline than to merely calcic salts; but the two properties are often found together, so that a classification made on this basis closely approximates that based on the soap test.

[1] M. Barron, *Amer. Journ. Med. Sci.*, Philadelphia, 1918, clvi. 358-369.

THE BRITISH RED CROSS.

At a luncheon given by him on October 9th, at the Savoy Hotel, Lord Devonport, chairman of the Lord Mayor's Red Cross Appeal Committee, made an eloquent appeal on behalf of "Our Day," which will be held on October 24th. Among the activities of the British Red Cross and Order of St. John of Jerusalem none, he said, is deserving of more sympathy than the succour of British prisoners of war, on whose behalf more than one and a half million pounds a year are expended by the organization. Lord Devonport blamed the Government for the delay in effecting the return of prisoners, and said that according to trustworthy accounts 70 per cent. of those who were captured at Kut are now dead, and the survivors are still in captivity notwithstanding an agreement with the Turkish Government for their release. Sir Robert Hudson, chairman of the finance committee of the joint organizations, said that for every £1 subscribed the administration expenses are 4d., which is reimbursed by the interest received from investments. Replying to those who object that the State should undertake the duties performed by the Red Cross, he explained that on the one hand no Government can act as swiftly in an emergency as a voluntary society, which is so organized that it can and will supply everything, except red tape, at a moment's notice; and on the other hand the public wishes to take a share in ministering to the sick and wounded soldier and sailor, and has found by experience that it can best do so collectively, through the Red Cross as its channel of generosity. Already ten million pounds have been expended by the joint societies, and £80,000 worth of stores are sent every week for the use of hospitals and casualty clearing stations abroad, to say nothing of the assistance in money and kind given to the 1,500 auxiliary hospitals in this country with their 84,000 beds. Both Lord Devonport and Sir Robert Hudson especially insisted on the fact that the work of the Red Cross cannot come to an end with the end of the war, but that financial support will be very difficult to obtain after the close of hostilities.

MEDICAL SOCIETY OF LONDON.

The opening meeting of the 146th session of the Medical Society of London will be held at 11, Chandos Street, Cavendish Square, W.1, on Monday, October 14th, at 8 p.m., when the in-coming president, Major A. F. Voelcker, will deliver his address, and Dr. Theo. B. Hyslop will give a demonstration on degeneration in art, science, and literature. The programme for the ensuing season includes papers on rheumatoid arthritis, by Dr. T. S. P. Strangeways and Dr. A. P. Beddard, on October 28th; a discussion on reconstruction and the practice of medicine, on November 11th; a paper by Professor J. G. Adami, on heredity as a factor in certain diseases, on November 25th; and a paper on epidemic encephalitis, by Major E. F. Buzzard, on December 9th. On January 27th, 1919, a discussion on the modern treatment of gonorrhoea of the genito-urinary organs will be introduced by Colonel L. W. Harrison, R.A.M.C. The Lettsomian lectures on jaundice will be delivered next spring by Colonel W. H. Willcox, and the annual oration will be given in May by Sir John Tweedy.

A course of demonstrations will be given in the Museum of the Royal College of Surgeons of England by Professor Arthur Keith, on Fridays at 5 p.m., beginning on October 18th. The first demonstration will be on nerve suture and nerve regeneration; the second, on October 25th, on the physiological effects of massage and gymnastics; and the third, on November 1st, on bone-setting, ancient and modern.

THE WAR.

THE WESTERN FRONT.

II.

THE FIFTH WINTER.

LET the medical profession not deceive itself. The armies are facing the fifth winter of war. Even if peace should break out at once, the medical services at home and in the field would not find their duties much altered or their burdens appreciably diminished in weight. Sickness, in spite of all prevention, will be with us to the end even if the casualties in battle should cease.

It is yet too early even to consider the possibility of a cessation of war. For the medical services an armistice does not exist until the last soldier is returned from the field and is re-established in civil life. But as rumours of peace become more insistent the medical personnel will become restless. They will desire to take up their normal life from which they have been so long drawn aside. In time the interest will have passed and the excitement died down. There will not be the stimulus of battle to energies which have begun to flag.

At the present moment it is a groundless assumption that the coming winter will be different in any favourable respect from those which have preceded it, and if the enemy succeeds in making that impression, to such an extent will he have gained. It is not what he says, but what he does, that we must choose as our guide.

With each winter the difficulties of the medical services increase by multiplication rather than diminish by that ease of handling which comes with experience. The soldier has a mind as well as a body, and mental trouble increases at a ratio which has not yet been calculated. These mental symptoms have long since shown themselves amongst the enemy because his distress was the greater, and a new literature has grown up in his language.

It is not that these symptoms are new. Isolated instances have been familiar to all specialists; when they occur in the mass they are obvious to the least observant eye. Hysteria, which has long been regarded as the peculiar prerogative of women, is now known to be not an affair of sex but a manifestation of that portion of the mind which is common to the male and female alike. Such primitive emotions as those created by fear, cold, hunger, love, hatred, produce certain reactions which are normally kept under control. When these emotions are too strong for the organism, control breaks down, and the primitive mind asserts itself. The feminine nature either feels more strongly or is less resistant to the reactions which those emotions arouse. That is all one can say; but the result is a breakdown in moral.

To one who is not made familiar with this downfall of control, and the resurgence of the primitive mind, by witnessing its occasional occurrence in women, the spectacle is distressing when it occurs in a man, and especially so when the man affected is a soldier who has been remarkable for a control which shows itself as courage and daring in the field.

Such cases are seen most commonly by the regimental medical officer, and he is utterly at a loss for an explanation. To him it is a spectacle of human nature naked and unashamed. The display of weakness offends him. His business is with the body of the soldier; to the mind he has not learnt to minister. A breakdown of moral is rare in his experience, and the casual books afford him no guidance.

In the usual course of events the man returns to his duty, and relying upon his comrades and his officer he comes through somehow, lies where he falls, or is evacuated in an appalling condition of neurosis, neurasthenia, or whatever the newest term is. But if the victim is an officer the case is more serious. He is face to face with an admission of failure in circumstances where his courage, that last possession of the soldier, may be impugned. Before him he descries disgrace—upon himself, upon his family, and upon his regiment. Under such a stimulus to action his spirit is somewhat braced, and his men may be led to failure and death by a broken and bewildered mind.

A professional army does not attract men who experience emotions so strongly that the reactions are not under easy control, and if such a tendency does exist it is checked by the stolid military routine. When the whole population is at war this breakdown in moral is more greatly to be feared; and if it cannot wholly be prevented, its worst consequences may be stopped.

The danger is greatest at the approach of winter, save in the case of new troops, whose ignorance makes them wise. It seems incredible, but it is true, that enormous numbers of officers and men are about to face their fifth winter in the trenches. Their past lies behind them; but it is ever present in their minds as an eternity of cold, wet, darkness, misery. With the disposition of the forces the medical service has nothing to do; and yet it is worth enunciating a sound principle of psychology, that an exchange of boredom produces the effect of novelty. If the boredom of the base and of the office were more freely exchanged for the boredom of the trench and the cave, both parties would profit.

The Germans have from the beginning been alert to the danger from boredom. They moved their troops freely, and their inner lines made the process easy. The men saw a new area, a new style of mud, new faces, and possibly a new brand of beer. Even the cold felt different, and the misery itself was of a new kind. For years the diaries of prisoners referred to "journeys"—"journeys by foot," and "journeys by rail." It is uniformity that kills.

But the medical services have to do with the mind as well as the body of the soldier, and at the beginning of this fifth, and worst, of winters these services should be impressed, even from civilian sources, with a new sense of their power and responsibility. The bodily health of the troops is better than amongst the civil population. The achievement is great, but it is not enough. The organization is there. The army is rich in specialists and consultants. The time has come for them to transmit more of their authority to the regimental medical officer who comes in contact with the men.

A medical officer does not cease to be a physician when he puts on the uniform of a soldier. In the long winter his purely technical duties are light. He can accomplish much good by reverting to the Hippocratic tradition and making the case of each soldier peculiarly his own. The theory that a man is either sick or well is too rigid. The physician has a place between the two extremes where he can bring comfort and courage.

The drift of military medicine is towards the mass and away from the individual. It has gone too far. It should be checked. That medical officer should be held to succeed best who practises his profession in the true spirit of the physician. His place in contact with the daily lives of men is the highest, not the lowest, in the service. He should be the confidant of officers and men, and he should have sufficient liberty

of action and responsibility to make it worth reposing confidence in him. He is the one whom the soldier should seek when he feels his moral in danger; and the medical officer should be in a position to advise rest for recreation on purely medical grounds, with some assurance that his advice will be carried out.

The work of the regimental medical officer has become too mechanical. The post, with all its other attendant hardships, is too much avoided by men who have proved in civil life that they have the real qualities of the physician. Such men are needed less in the hospital and more in the trench.

The wonder is not that failure of individual moral should have occurred in certain instances, but that it should have survived the trials of the past four years. Never before have armies for so long a time endured strategic defeat, even if it was relieved by an occasional tactical triumph. But now, victory is in the air; and victory is a sovereign remedy for the weary mind.

There is enough machinery in the medical service. The thing for which we plead is an affair of the spirit. The spirit is there. The directors, who are themselves physicians, can easily evoke it. They can select for the front men of the Hippocratic spirit, in whom the profession is rich, and they can insist continually that medical officers, whilst remembering that they are soldiers, shall not forget that they are first physicians.

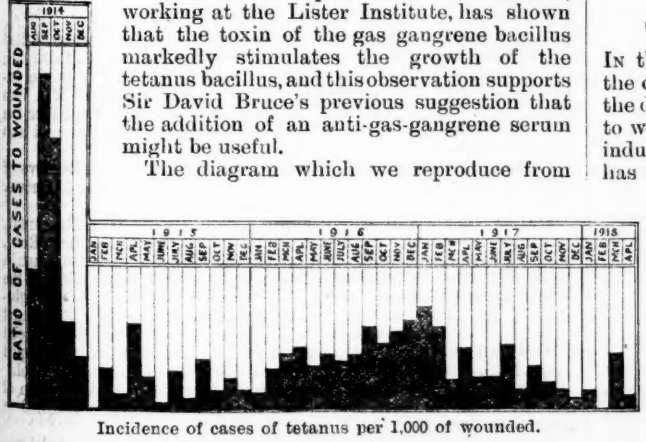
TETANUS IN HOME MILITARY HOSPITALS.

SUMMARIES have been given from time to time in the JOURNAL of the first six analyses of cases of tetanus treated in home military hospitals; and in our issue of February 23rd, 1918, we discussed the analysis of a thousand cases of tetanus which formed the subject of the presidential address given to the Society of Tropical Medicine and Hygiene a year ago by Major-General Sir David Bruce. We have now received the seventh, eighth, and ninth analyses of a hundred consecutive cases of tetanus treated in this country, the whole period under review covering the months between June, 1917, and April, 1918. The following table shows the number of cases of tetanus dealt with in each of the nine analyses and the rate of mortality:

Analyses.	No. of Cases.	Recovered.	Died.	Mortality per cent.
1914-15	231	98	133	57 7
1915-16	195	99	96	49.2
Aug.-Oct., 1916	200	127	73	36.5
Oct.-Dec., 1916 ...	100	69	31	31.0
Dec., 1916-March, 1917	100	81	19	19.0
March-June, 1917 ...	100	71	29	29.0
June-Sept., 1917	100	85	15	15.0
Sept.-Dec., 1917	100	84	16	16 0
Dec., 1917-April, 1918 ...	100	76	24	24.0
Total	1,226	790	436	35.5

It will be seen that the death-rate, which appeared to have reached its low water mark in the fifth analysis, was even lower in the seventh and eighth. In this connexion Captain Tulloch, R.A.M.C., working at the Lister Institute, has shown that the toxin of the gas gangrene bacillus markedly stimulates the growth of the tetanus bacillus, and this observation supports Sir David Bruce's previous suggestion that the addition of an anti-gas-gangrene serum might be useful.

The diagram which we reproduce from



Incidence of cases of tetanus per 1,000 of wounded.

the ninth analysis represents the ratio of cases of tetanus to the number of wounded soldiers treated in home military hospitals from August, 1914, to April, 1918; the cases are reckoned from the date of wound, not from the onset of disease. The abrupt fall in the ratio in November, 1914, is due to the introduction of prophylactic injections of antitoxin, which took place in the middle of October.

Taking the last three analyses together, the shortest period of incubation—that is, the interval which elapsed between the date of wound and the onset of tetanus symptoms—was three days, and the longest no fewer than 536 days. The average incubation periods of the nine consecutive series analysed have been as follows: 13.4, 31.2, 30.6, 45.0, 67.0, 44.1, 55.5, 46.9, and 49.19 days. During the ten months now under review there were roughly three times as many cases of generalized as there were of local tetanus in home military hospitals.

In the seventh analysis it is noted that of the nine cases in which no prophylactic dose of antitetanic serum had been given, six arose in England. One patient was infected with garden soil when acting as a gardener; another had a finger crushed with a blow from a hammer at a farm; two cases followed operation for appendicitis; one followed a fall on a garden path; and the last was the case of an artillery officer serving at home. With regard to the influence, if any, of promptitude in giving prophylactic injections on the rate of mortality, the most recent figures do not seem at all conclusive; it is quite possible, however, that the rate of incidence may be affected, though on this point no figures are at present available. All the cases now under review received therapeutic treatment with antitetanic serum. There appears to be no difference in the rate of mortality in cases of tetanus according to whether the wound is complicated by a fractured bone or not. It has not at present been ascertained if there is any difference in the rate of incidence, but it seems probable that this rate would be greater in wounds complicated by fractures. Once again the question is asked whether there is any evidence that the intrathecal route has any advantage over the other methods of injection, but Sir David Bruce still finds it impossible from the figures analysed to make out a case either for or against this route. We observe that the empirical treatment of tetanus by carbolic acid or magnesium sulphate seems now to have been definitely abandoned in this country.

THE DISABLED SOLDIER IN CANADA.

IN the JOURNAL of September 15th, 1917, we referred to the organization in Canada for bringing to the notice of the disabled soldier the means whereby he may be restored to working life, and set up in a career of self-supporting industry. The familiar poster, printed in red and black, has now been rewritten with the heading, "What every invalided Canadian soldier and sailor should know." Several paragraphs have been omitted now that full details are to be found in the returned soldier's handbook, which every invalided man should possess. The information contained in the new poster is also reproduced in pocket size on a khaki card which is given to every invalided member of the Canadian forces. The chief duties of the department of soldiers' civil re-establishment of the Canadian Invalided Soldiers' Commission are as follows: (1) Training in new occupations for men unfitted for their old work because of their war service; (2) medical treatment for men needing prolonged care, and for men who have come back for such treatment after discharge; and (3) artificial limbs and orthopaedic and surgical appliances. An illustrated poster issued by the department gives pictures of returned soldiers working at various occupations, such as tractor ploughing, typewriting, school teaching,

machine work, electrical engineering, and fruit growing. In order that every invalided soldier may know where to apply for information regarding his interests, he is given on his discharge a card showing the addresses of all assistant directors of the Invalided Soldiers' Commission, district officers to the pensions board, and secretaries of the provincial soldiers' employment commissions. Every invalided Canadian soldier is expected to lay to heart the following motto: "Skill won makes up for strength lost."

CASUALTIES IN THE MEDICAL SERVICES.

ROYAL NAVY.

Died of Wounds.

SURGEON F. P. POCOCK, D.S.O., M.C., R.N.

Surgeon Frank Pearce Pocock, D.S.O., M.C., R.N., died of wounds on September 29th, aged 27. He was the younger son of Mr. Charles Wellesley Pocock of Portishead, formerly of Ealing, and was educated at King's College, London, and at Westminster Hospital, taking the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1913. At the beginning of the war he took a temporary commission in the navy, and for some time served on H.M.S. *Colossus*. He received the D.S.O. on July 23rd, 1918, and had previously gained the Military Cross.

Wounded.

Surgeon J. S. Roberts, R.N.

ARMY.

Killed in Action.

LIEUT.-COLONEL F. H. BRADLEY, D.S.O., R.A.M.C.

Lieut.-Colonel Frederick Hoysted Bradley, D.S.O., R.A.M.C., was killed in action on September 22nd, aged 34. He was born on November 22nd, 1883, the youngest son of the late Canon Bradley of Monaghan, and was educated at Campbell College, Belfast, and at Edinburgh University, where he graduated M.B. and Ch.B. in 1906. He entered the R.A.M.C. as lieutenant on February 4th, 1908, was promoted to captain on August 4th, 1911, and during the war to major and acting lieutenant-colonel. Before the war he was serving in India, but came to France in September, 1914, and had served there ever since. He received the D.S.O. on January 1st, 1918.

MAJOR T. F. P. BREEN, R.A.M.C.

Major Thomas Francis Pennefather Breen, R.A.M.C., was killed in action on September 18th, aged 29. He was born on June 8th, 1889, the elder son of the late Inspector-General Breen, R.N., and was educated at Stonyhurst and at Trinity College, Dublin, where he graduated M.B., B.Ch., and B.A.O. in 1912. After acting as senior house-surgeon of the Mater Misericordiae Hospital, Dublin, he entered the R.A.M.C. as lieutenant on January 30th, 1914, was promoted to captain on March 30th, 1915, and subsequently to acting major. He went to France with the first expeditionary force in August, 1914, was with No. 11 Field Ambulance in the retreat from Mons, and had served in France ever since; for part of the time in command of a field ambulance, and twice acting as D.A.D.M.S.

MAJOR H. B. GERMAN, M.C., R.A.M.C.

Major Hugh Bernard German, M.C., R.A.M.C., was killed in action on September 18th, aged 38. He was the eldest son of the late Alexander German and of Mrs. German of Southsea, was educated at Guy's Hospital, and took the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1904. He then entered the Royal Navy as surgeon, and while in the navy received a medal for his services in connexion with the Calabrian earthquake of 1908, and also the Order of the Crown of Italy. While still holding the rank of surgeon he resigned and went into practice at Waltham Abbey, Essex. He held a temporary commission in the R.A.M.C. as captain from January 8th, 1916, and had since been promoted to acting major. He received the Military Cross on February 4th, 1918, and a bar thereto on September 16th.

MAJOR C. MCN. MCCORMACK, M.C., R.A.M.C.

Major Campbell McNeill McCormack, M.C., R.A.M.C., was killed in action on September 21st. He was the youngest son of Mr. William McCormack of Hillhall House, Lisburn, and was educated at Lisburn School and at Belfast University, where he graduated M.B., B.Ch., and B.A.O. in 1914. He took a commission as lieutenant in the R.A.M.C., Special Reserve, on February 5th, 1914, and joined for duty on August 6th, 1914. During the war he had joined the regular R.A.M.C., in which he held the rank of captain and of acting major. In January, 1916, he was mentioned in dispatches, and on September 22nd, 1916, he received the Military Cross. He was slightly wounded not long ago.

CAPTAIN K. MCA. ROSS, R.A.M.C.

Captain Kenneth McAlpine Ross, R.A.M.C., was killed in action on September 17th, aged 26. He was the second son of the late Dr. Ross of Ibrox, Glasgow, and was educated at Glasgow University, where he graduated M.B. and Ch.B. in 1915. He joined the R.A.M.C. as a temporary lieutenant immediately after he had qualified, and was promoted to captain on completion of a year's service.

Died of Wounds.

MAJOR J. HUGHSTON, R.A.M.C.

Major J. Hughston, R.A.M.C., was reported as having died of wounds, in the casualty list published on September 28th. He joined the R.A.M.C. in 1915, was promoted to captain after a year's service, and subsequently to temporary major.

Wounded.

Major A. R. Dale, M.C., R.A.M.C.(S.R.).
Major C. B. Davies, M.C., R.A.M.C. (temporary).
Major W. Russell, M.C., R.A.M.C.(T.F.).
Major E. S. Sowerby, M.C., R.A.M.C. (temporary).
Captain E. C. Bowden, R.A.M.C. (temporary).
Captain R. H. Fleming, R.A.M.C. (temporary).
Captain W. K. Flock, Australian A.M.C.
Captain N. F. Graham, R.A.M.C. (temporary).
Captain W. H. Johnston, R.A.M.C. (temporary).
Captain H. K. Ward, M.C., R.A.M.C.(S.R.).
Captain D. R. Wark, Canadian A.M.C.
Lieutenant G. E. Birkett, R.A.M.C.(S.R.).
Lieutenant F. Cameron, R.A.M.C.(S.R.).
Lieutenant H. Chodak, R.A.M.C. (temporary).

Missing.

Captain W. C. D. Wilson, R.A.M.C.(T.F.).

Prisoner of War.

Major (Quartermaster) E. J. Tilbury, R.A.M.C.

DEATHS OF SONS OF MEDICAL MEN.

Arnott, Robert Louis Irving, Second Lieutenant Indian Infantry, younger son of Lieut.-Colonel Arnott, I.M.S.(ret.), of Edinburgh, and of Wyseby, Dumfriesshire, killed September 19th. He was educated at Edinburgh Academy, and got a King's cadetship at the Indian Military College at Wellington, Nilgiri Hills, from which he joined the Indian army in February, 1918.

Atkinson, Frederick Batty, Second Lieutenant R.F.A., younger son of Dr. Atkinson of Newnham-on-Severn, killed September 25th, aged 19. He was educated at St. Lawrence College and Cheltenham College, where he was a house exhibitioner and in the Upper Sixth, finally passing 38th into Woolwich. He was in the XXII, played several times for the XV, and won the Eton Fives (Pairs) Championship, and also played full back for Woolwich.

Aymer, Alfred Ireland, Lieutenant Indian Army Reserve of Officers, youngest son of the late Dr. James Aymer of Bervie, died of wounds on September 25th, aged 25.

Daunt, C. O'Neill, Lieutenant South Lancashire Regiment, younger surviving son of Dr. F. E. H. Daunt of Clapham Road, S.W., killed September 29th, aged 27. He came from Canada with the second Canadian contingent, got a commission in the South Lancashires, with whom he served throughout the fighting in 1917, and was transferred to the Royal Air Force and promoted to lieutenant in 1918. His younger brother, Second Lieutenant Giles Daunt, was killed in Mesopotamia on April 19th, 1916. Both were educated at the City of London School.

Doyle, Eric Douglas, M.C., Lieutenant R.F.A., elder son of Mr. A. A. Doyle, F.R.C.S.I., of Brisbane, Queensland, killed in action on July 29th, 1917, aged 23 years.

Forbes, William Guthrie, Major Royal Garrison Artillery, younger son of the late Dr. W. G. Forbes and of Mrs. Forbes of Stokesley, Yorkshire, died of wounds on September 26th, aged 28.

Jakins, Harley, Queen's Westminster Rifles (16th County of London Battalion, London Regiment, T.F.), only son of Dr. P. S. Jakins of Harley Street, died on July 11th as a prisoner of war at Parchton, Mecklenburg.

Knight, Robert Halley, Captain Wiltshire Regiment, killed in Palestine September 19th, younger son of Dr. A. A. H. Knight, formerly President of the Border Counties Branch of the British Medical Association, who for fifty years practised at Keswick and recently retired to Bolton-le-Sands, Lancaster. He was educated at Fettes College, and afterwards articled to Messrs. Fletcher, chartered accountants, Salisbury. He got a commission on October 7th, 1914, and was sent to India early in the war, subsequently serving in Egypt and Palestine. He had twice been wounded.

Rennie, Edward Clement, Lieutenant Royal Air Force, whose death we announced in our issue of July 13th, died of injuries at Salonica, June 16th, 1918, aged 21 years. He was the third son of Dr. George E. Rennie of Sydney. From Sydney Grammar School he entered the University of Sydney. He went to England with his elder brother, Lieutenant Cyril T. Rennie (who was killed in September, 1916), and obtained his commission in the Royal Garrison Artillery. After training in England he was sent with his battery to Salonica, and was transferred to the Royal Air Force last April.

Sheridan, John W., Lieutenant Royal Air Force, son of the late Dr. J. W. Sheridan of Stowmarket, accidentally killed September 27th, aged 29.

Thomson, Cyril Ground, Lieutenant Yeomanry, attached Prince Albert's Own Somerset Light Infantry, only son of Dr. E. B. Thomson of Plymouth, killed September 22nd, aged 27. He got a commission in the West Somerset Yeomanry on April 10th, 1915.

Thursfield, John George Havard, gunner, South African Horse Artillery, youngest son of the late Dr. T. Greville Thursfield, J.P., of Broseley, Shropshire, died of accidental wounds on September 13th, aged 34. Before joining the army he was assistant resident magistrate at Boshof, Orange Free State.

[We shall be indebted to relatives of those who are killed in action or die in the war for information which will enable us to make these notes as complete and accurate as possible.]

HONOURS.

AMONG the additional awards for services in the battle of Jutland on May 31st, 1916, the Distinguished Service Cross has been conferred upon Surgeon Probationer Alexander Joe, R.N.V.R., medical officer of H.M.S. *Nestor*.

He behaved with the greatest coolness under fire, tending the wounded single-handed both in *Nestor* and later on board a German destroyer. His conduct was highly praiseworthy throughout.

Surgeon Probationer Charles C. Elliott, R.N.V.R., has been awarded the Distinguished Service Cross for services in the destroyer action in the Adriatic on the night of April 22nd-23rd, 1918.

He carried out his duties in attending wounded under heavy fire and difficult conditions. Although he was suffering from a painful sprained wrist, his skilful work undoubtedly saved several lives. His conduct was an example and encouragement to all on board.

Surgeon-Probationer Joseph E. Deane, R.N.V.R., has been mentioned in dispatches.

Major-General W. G. A. Bedford, C.B., C.M.G., A.M.S., is included in a further list of officers brought to the notice of the Secretary of State for War for valuable services rendered in connexion with the war.

The following medical officers are included in a list of names brought to the notice of the Secretary of State for War for valuable services rendered in connexion with military operations in Hedjaz (Supplement to the *London Gazette*, October 7th): Major W. McConaghy, R.A.M.C.; temporary Captain W. N. Montgomery, R.A.M.C.

An additional list of names brought to notice for distinguished and gallant services and devotion to duty by Field Marshal Sir Douglas Haig, Commander-in-Chief of the British Armies in France, in his dispatch dated April 7th, 1918 (BRITISH MEDICAL JOURNAL, June 1st, p. 630), includes the following medical officers: Colonel R. M. Simpson, C.A.M.C.; temporary Captain A. C. Mann, M.C. R.A.M.C., attached to South Wales Borderers; and Lieutenant (temporary Captain) W. H. Ferguson, R.A.M.C.(S.R.).

A further list of officers brought to notice for distinguished and gallant services and devotion to duty by General Sir E. H. H. Allenby, Commander-in-Chief of the Egyptian Expeditionary Force, in his dispatch dated April 3rd, 1918 (BRITISH MEDICAL JOURNAL, June 22nd, p. 709), has been published, and includes the following medical officers: Colonel E. G. R. Evatt, R.A.M.C., Lieut.-Colonel (temporary Colonel) G. A. T. Bray, R.A.M.C., temporary Lieut.-Colonel H. Wade, R.A.M.C., Major (temporary Lieut.-Colonel) M. Dunning, R.A.M.C., temporary Major J. J. Abraham, R.A.M.C., Captain (acting Lieut.-Colonel) E. C. Lambkin, R.A.M.C.

The names of the following medical officers have been added to those brought to notice for distinguished services by Lieut.-General J. L. Van Deventer, Commander-in-Chief of the British Forces in East Africa, in his dispatch of January 21st, 1918 (BRITISH MEDICAL JOURNAL, August 10th, p. 144): Lieut.-Colonel R. T. Brown, D.S.O., R.A.M.C., Lieut.-Colonel P. W. O'Gorman, I.M.S., Major (temporary Lieut.-Colonel) P. S. Clarke, S.A.M.C., Major R. S. Kennedy, M.C., I.M.S., temporary Major W. J. Gow, R.A.M.C., Captain (acting Lieut.-Colonel) J. A. Manifold, R.A.M.C., Captain T. S. Dunn, E.A.M.S.

Captain B. A. Odlum and temporary Captain M. B. Arnold, of the R.A.M.C., are mentioned in dispatches for valuable special services on the Mediterranean lines of communications.

ORDER OF THE BRITISH EMPIRE.

A Special Supplement to the *London Gazette*, dated October 4th, contains a list of promotions in, and appointments to, the Most Excellent Order of the British Empire for services in or for the Overseas Dominions and Protectorates in connexion with the war. The list includes the following members of the medical profession:

To be O.B.E.: Dr. Mary Booth (Organized Friendly Union of Soldiers' Wives and Soldiers' Club, Sydney); Lieut.-Colonel Arthur S. Herbert, N.Z.M.C. (for special services in connexion with military hospitals in Rotorua); Lieut.-Colonel Herbert H. Y. Hearsey (P.M.O. to the Civil Government and Assistant Director of Military Medical Services, Nyasaland Protectorate).

To be M.B.E.: Dr. Conrad Akerman (Pietermaritzburg), Dr. Patrick P. J. Ganteaume (Mayor of East London), Dr. Robert Strachan (Mayor of Germiston), Dr. Joseph B. Addison (Chief Medical Officer, Colony of Seychelles, for services in connexion with war charities); Dr. Robert Howard, of the Universities Mission to Central Africa (for voluntary service in attending sick and wounded native soldiers and carriers, Zanzibar); Surgeon-Major John Hutson (Public Health Inspector, Barbados, and P.M.O. to the Barbados Defence Force); Dr. James Lochhead (Surgeon, Colonial Hospital, Gibraltar, for services to merchant seamen).

Ireland.

IMMEDIATE NEED OF DOCTORS FOR THE ARMY.

A MEETING of the Irish Medical War Committee was held in the Royal College of Physicians on October 3rd, when Dr. Joseph O'Carroll, president of the Royal College of Physicians, presided, and the following were present: Dr. D. J. Coffey, president University College, Dublin; J. B. Story, president Royal College of Surgeons; the Right Hon. M. F. Cox, Dr. E. Coey Bigger, Lieut.-Colonel F. Conway Dwyer, Lieut.-Colonel M. L. Hearn, Dr. E. MacDowel Cosgrave, Colonel Hodgetts, Dr. R. J. Rowlette, T. Hennessy, F.R.C.S.I., Irish Medical Secretary, British Medical Association; M. R. J. Hayes, F.R.C.S.I., Honorary Secretary.

Owing to the heavy fighting which is at present taking place on the Western front the resources of the R.A.M.C. have been taxed to the uttermost, and at the moment there is a very urgent need for young doctors at the front. An urgent appeal has been made to this committee to supply the great additional need which at present exists, and in co-operation with the principals of all the medical schools and licensing bodies in Ireland, this committee now submits the most earnest request to all recently qualified doctors to enter the service in which their professional knowledge and skill are so urgently required. For obvious reasons the actual shortage may not be stated, but the information supplied to the committee leaves no doubt that the need for doctors is very great.

Bearing in mind the ready response which its former appeals have received, and acknowledging the valuable service which the Irish doctors have hitherto rendered in the war, the committee believes that this appeal will not be made in vain, and that the call of suffering humanity will find a ready response from Irish medical men, whose sympathy and generous self-sacrifice in alleviation of suffering have become traditional. Apart altogether from the appeal which is made to them from the wounded, those who help will have the opportunities of great experience, and of laying the foundations of a successful career.

Commissions in the R.A.M.C. will be given on the following conditions:

1. The period of service will be for twelve calendar months, or until service is no longer required, whichever shall first happen.
2. Pay shall be at the rate of 24s. a day, inclusive of all money allowances except the regulated travelling allowances and expenses when travelling on duty.
3. In addition to such pay a free passage to and from any country abroad to which they may be sent.
4. On completion of service a gratuity of £60.
5. An allowance of £37 10s. for military outfit and camp kit.

Forms of application for commissions and conditions of service will be supplied by the Honorary Secretary, Irish Medical War Committee, 16, South Frederick Street, Dublin.

Scotland.

In his annual report of James Murray's Royal Asylum, Perth, Dr. Robert Dods Brown, physician-superintendent, expressed great satisfaction that a crusade had been instituted against venereal disease, which, often contracted innocently, was the source of a great amount of insanity of an incurable nature affecting men and women in the prime of life, and of mental deficiency in the young. No less than 15 per cent. of the deaths in the asylum were due to syphilis. From the statistical part of the report it appeared that there was no definite evidence that the war was the exciting cause in any case admitted.

The Shakespeare Hospital for discharged disabled sailors and soldiers, established in a school handed over by the Glasgow School Board to the Joint (Disablement) Committee for the South-West of Scotland, was formally opened on October 4th by Sir Arthur Griffith-Boscawen, Parliamentary Secretary to the Ministry of Pensions, who said that by the generous help of the Scottish Branch of the Red Cross Society and the Soldiers' and Sailors' Help Society, the building has been converted into a hospital at a cost of £10,000 without calling upon the Ministry of Pensions or the public. Accommodation is provided for 200 patients.

A Scottish Chelsea Hospital.

At a meeting in Edinburgh on October 4th it was resolved to establish an institution in Scotland on the lines of Chelsea Hospital as a provision for disabled men. The Lord Provost said that while too high a tribute could not be paid to the work of the various regimental associations for the care of discharged soldiers, it was intended to place a considered scheme before the authorities for the establishment of an institution for Scotland of the kind indicated. Lord Scott Dickson, in moving a resolution affirming that the time had come when honourable and adequate provision should be made for Scottish soldiers disabled in the service of their country or who attained old age without the means of providing a comfortable home and obtaining the attention their infirmities or disablement demanded, said that the first thing was to get State recognition of the duty; that recognition ought to imply State support. Scotland's share in the war had been something like 800,000 fighting men, and the regimental associations of the district were strongly in favour of the scheme. Mr. C. E. Price, M.P. for Edinburgh (Central), said that all his colleagues in Parliament were enthusiastically in favour of the proposal that there should be one great representative institution in Scotland. It had been suggested that Craiglockhart Hydropathic building would be very suitable. On the motion of Mr. J. F. Arthur, of the Regimental Associations Council, seconded by Mr. J. Budge, Scottish Federation of Discharged Sailors and Soldiers, a representative committee was appointed to draw up a scheme.

India.

Rao Sahib Dr. M. C. Koman, of Madras, has been placed on special duty for six months to investigate the value of drugs used in the indigenous systems of medicine.

Influenza was imported into Bombay by shipping early in June, and spread rapidly to all the great towns. The incidence has been very heavy but the mortality low.

Kala-azar in Assam.

The latest annual sanitary report for the province of Assam shows that kala-azar has spread to areas in Upper Assam hitherto immune. A conference called by the Chief Commissioner in Shillong framed a plan of campaign which was accepted by the local administration, and is now in active operation under the control of the sanitary department.

The Economics of the Rat Question.

An instructive estimate of the direct economic damage occasioned by rats is contained in a memorandum on plague preventive measures issued by the Sanitary Commissioner with the Government of India. An adult rat, it is stated, consumes upwards of three-quarters of an ounce of grain a day. Indian towns with a human population of a quarter of a million will at a low estimate contain half a million rats, and, supposing the rats to have a preference for grain selling at 10 seers for the rupee, they would consume food each day of the value of Rs.1,170 apart from doing a vast amount of damage to property of other kinds. This is equivalent to Rs.1.11.0 per head of the population a year, an amount which, if devoted to public health, would ensure freedom from plague and many other diseases. This aspect of the rat question deserves attention. The occurrence of plague cases on board ships sailing from Bombay has led to a trial of improved rat guards to prevent the access of rats to vessels lying in Indian ports.

Bilharziosis.

The Zoological Survey of India has been invited to co-operate with the medical authorities in an investigation into the molluscs of the peninsula. The troops in Egypt have been suffering from bilharziosis, and the object of the proposed investigation will be to discover whether molluscs capable of spreading bilharziosis are to be found in India.

The Red Cross in India.

At the annual meeting of the Indian Council of the St. John Ambulance Association at Simla, over which the Viceroy presided, it was announced that a project is under consideration for carrying on the Indian Red Cross after the war. The Bombay dépôt will be continued and there will also be Red Cross stores at stations, such as Rawal Pindi and Quetta, which are likely to be of the utmost value in frontier operations. Hitherto India has entirely lacked the help of the Red Cross in all her little wars.

Sydney.

Red Cross Society.

The last annual report of the Red Cross Society, presented at the recent annual meeting, showed that the total expenditure from the Australia Day account was £189,000, of which about £125,000 had been for the supply of overseas needs, while £64,000 was spent within the State. These figures do not include the value of goods provided by Red Cross workers throughout the State. Over 10,000 men had passed through the convalescent department, receiving aid in varying degrees, and 2,504 had been treated in convalescent homes, representing an increase of 100 per cent. on the figures of the previous year. There were 500 tuberculous cases on the list, of whom 188 had been cured in the sanatoriums. Many returned sick and wounded soldiers and their families participate weekly in the distribution of fruit and vegetables from the dépôt. Large quantities of goods have been regularly shipped overseas for prisoners of war and hospitals. The report of the tobacco department showed that some 2,000,000 cigarettes and 6,000 lb. of tobacco were shipped during the year, in addition to about the same number of cigarettes and 4,000 lb. of tobacco made available for the use of men in local hospitals and homes. The various industries have done very useful work, and the information bureau had been able to assist a very great number of persons seeking for news of soldiers overseas.

Royal Prince Alfred Hospital and Military Patients.

Negotiations have been in progress for some time past between the Defence Department and the directors of the Royal Prince Alfred Hospital with the object of arranging for the continuous treatment of returned soldiers at this institution. As a result, about 100 returned men were received into the wards of the hospital during July. The hospital agrees to receive into its wards all suitable cases sent for treatment by the military authorities, excluding infectious cases, under the ordinary hospital conditions, and the Defence Department pays to the hospital a daily specified sum to cover treatment, maintenance, and medical attention.

There is to be a daily minimum number of patients of 80, and the agreement is to hold good for at least six months. It has been arranged that these military patients should occupy practically the whole of Albert Pavilion; they will thus all be together, and will not interfere with the general work and routine of the institution on the civil side.

In view of the probable admission of a certain number of shell shock cases amongst the soldier patients, the chairman of directors, Sir Anderson Stuart, recently suggested that a Department of Psychotherapy should be established, and the matter was referred to the Medical Board of the hospital. After discussion it was decided that this scheme could only be carried out if suitable accommodation could be provided. The Minister of Health subsequently expressed the desire that the question should be considered by a joint committee of medical representatives of the Royal Prince Alfred, the Sydney, and the Coast Hospitals, which would discuss the question whether it was desirable to erect a special hospital, or whether it would be better to devise a scheme for such a department to be carried out in connexion with one of the existing hospitals. At a meeting of this committee it was resolved that, while the committee recognized the necessity for the proper treatment of nervous diseases and the early stages of mental disorders, it was of the opinion that none of the three hospitals mentioned was suitable for the purpose, and it therefore recommended that steps should be taken to establish a special hospital for the purpose; with this object it urged upon the Minister of Health the advisability of appointing a committee to consider the whole question and make recommendations. The meeting affirmed the principle that such a hospital should be so situated as to be readily available for the teaching of medical students in these important subjects. So far no definite steps have been taken to appoint such a committee.

Infectious Diseases and School Children.

During the year 1917 the number of school children absent from school in consequence of infectious disease was 27,532. This constitutes nearly 10 per cent. of the net enrolment in the primary schools. In addition to the children who were actually suffering from diseases, 11,000 were prohibited from attending school because they were contacts. The average period of absence for patients was 4.3 weeks, and for contacts 3.8 weeks, so that 13 out of ever 100 childen lost four days' schooling on account of infectious diseases during the year. Fewer children were absent on account of measles, whooping-cough, scarlet fever, and ophthalmia than in 1916. It was predicted in 1915 that the severe epidemic of measles then experienced would not recur for a few years. So far this has been borne out by the fact that the figures for measles showed a decrease of 3,370 on those of the previous year. An epidemic of mumps was experienced last year, over 15,000 pupils being absent for a period of 3.4 weeks each. Of the other infectious diseases, whooping-cough was responsible for nearly 4,000 children being absent for a period of 6.2 weeks; 5,400 were absent on account of chicken-pox, over 2,000 for ringworm, nearly 4,000 for diphtheria and croup, nearly 1,800 for scarlet fever. During the year 16 patients and 97 contacts were absent owing to cerebro-spinal meningitis, and 6 patients and 5 contacts were absent for infantile paralysis; 12 patients and 4 contacts were absent for an average of 11.8 weeks on account of tuberculosis.

During the same year the dental officers in the Department of Education treated nearly 20,000 school children, and in addition 13,000 were attended by either private or hospital dentists. The principal medical officer, Dr. Willis, draws attention to the number of children with carious teeth, and the number of children with dirty mouths is almost beyond belief. It is, he says, not uncommon for ignorant parents to refuse to allow the local dentist to do more than attend to the front teeth of children, and frequently the school dental officers have to refuse to do any work at all unless they are allowed to do all that is necessary. Of every thousand children needing dental treatment less than half have ever been to a dentist, and less than 5 per cent. have received any conservative treatment. The departmental dental officers work in all parts of the State. The work in Sydney is performed at a clinic, while the work in the country is performed by six travelling clinics and a travelling hospital.

Correspondence.

MEDICINE IN PARLIAMENT—MEDICAL RECONSTRUCTION.

Sir,—There are two important points to which I should like to call attention.

1. I am afraid that I did not make my meaning clear at the meeting at Steinway Hall on October 1st, and as the matter is very important I shall be glad if you will allow me to explain it further. The chief point I wished to emphasize was that, whether the medical representatives in Parliament were many or few, it was most important that the profession should keep them thoroughly informed of the views of practitioners following different lines of practice and practising under different circumstances (for example, country or town), and of the reasons for these views. In this way their representatives in Parliament would have before them the various sides of the problems, and would therefore be able to decide with some degree of certainty and unanimity, after consideration of the various points, what is the most suitable line to take when these matters come before Parliament, and what lines will most closely represent the considered experience of the various classes of practitioners.

During the year that I have been in Parliament I have only twice had views brought before me in connexion with medical subjects which were under discussion. This is not the way in which other professions or trades manage their business; there is no important subject, with the single exception of medicine, which has come before Parliament in my short experience with regard to which we have not received many reasoned letters and leaflets from the parties concerned. To keep the medical members in Parliament fully informed as to facts and views is really as important a matter, and possibly more important than that of the actual number of members of the medical profession in Parliament. I hope therefore that, during this reconstructive period, men in different branches of the profession and practising in various parts of the country will come together and place their views and experience before the medical members in Parliament in connexion with any medical subject which is under discussion.

2. The time is approaching when civilian medical men who have been serving for a long time abroad will be coming back, and it behoves those of us who have remained in England to do our best to help them out of the difficulties in which their long absence from their practices may have placed them. This matter was, I believe, discussed some considerable time ago by the British Medical Association, but was dropped for a time; I think, however, that it must be taken up again without further delay.

The needs of these men will be various. Some who have partners who have been keeping things together may be able to resume their practices without requiring any help, and the same applies to those who have some private means. There are many others, however, who, if they are not helped to re-establish themselves, will be in very serious trouble. Such are:

A. Men without partners who have been absent for a long time and who may find that, in spite of the best services of their neighbours, their practice has more or less disappeared, at any rate for the time being; but still, if they can settle down again in the same place, a good deal of it may return and a fresh practice may be established. But I fear that a good many of the men of this class will find it difficult to wait long enough and may require some temporary financial assistance to enable them to regain their position.

B. A good many will have lost their practices altogether and will have to start afresh. Two things may be required for such men: in the first place, information as to suitable places to settle in—for example, where doctors are most needed; and in the second place, temporary financial assistance.

C. Men who have not previously been in practice will require advice and guidance on the same lines as B, but I hardly think that they have the same lien on the medical profession for financial assistance as men who have been taken away from their practices. Incidentally it may no doubt be said with truth that it is the State who ought to help financially to reinstate the medical men whom they have taken away, but the time for action

would probably have passed before any tangible result could be got in that direction.

As to the body or bodies who might undertake this work it seems to me that as all the information as regards practices is already in the hands of the various war selection committees, or can be most readily obtained by them, they would be the natural bodies to take up the matter of medical reconstruction. There would be no charity in what I am suggesting; no doubt funds for expenses would need to be collected, but beyond that all that would be required would be a large guarantee fund for the loans. This fund would probably never be called on—or only to a small extent—as I believe that those who received loans would look on it as their first duty to pay interest punctually, and to repay the loans by instalments as soon as possible. If this suggestion is taken up I for one—and I am sure many others—would be glad to join in forming a guarantee fund, and in subscribing towards the expenses. —I am, etc.,

Chatham, Oct. 7th. W. WATSON CHEYNE.

SIR,—If any proposal comes from the Committee which may be formed as the result of the meeting held at the Steinway Hall on October 1st to the British Medical Association for *liaison* or any kind of official combination I would urge the Association to have nothing whatever to do with it. The impression which I formed of the meeting was that we were being treated to a very poor kind of reactionary farce. The Minister of Reconstruction was dismal and uninspiring; the chairman talked harmless constitutional heresies; the effective motions as originally submitted breathed a spirit of tepid Kaiserism, and the plot of the whole affair revealed itself in the mild machinations of a few London consultants who appear to be groping for some backdoor entrance to the House of Commons. They call a meeting of the medical profession, submit their names (camouflaged by five names from the P.M.P.U. and two from the British Medical Association) for election as a committee, and, doubtless, by and by the half-dozen will in committee "nominate" themselves as the chosen representatives of the medical profession. I wonder if any of the whips of any political party will be deluded by these farcical proceedings.

Now, Sir, the British Medical Association is a democratic body, and can have no association or union with a committee which approves of occupational representation and of the creation of a caucus which arrogates to itself the right of selecting or nominating medical men to represent the medical profession in Parliament. The Association proceeds on this matter along sound lines. It seeks no caucus; it regards alike all political parties; it hopes soon to be in the possession of funds for the assistance of medical men who are candidates; and it connives at no pact with party whips for the nomination of this or that candidate.

Much hostility was shown at the meeting to the British Medical Association, and I think only one name of any prominence in the Association figured *by consent* upon the list of names "nominated" as a committee; but apart from this, and solely upon the grounds of divergent and irreconcilable principle, I would urge the Association to have nothing to do with the evolutions or manœuvres of the Steinway Hall harlequinade.—I am, etc.,

October 7th. POLITICUS.

SIR,—It is beyond dispute that medical science is not adequately represented in the State councils of Great Britain. In the House of Lords who can speak with authority on any phase of medical science? The Privy Council has but one competent authority. In no other legislative assembly in the British empire is there such a striking dearth of experts in medical science as in the House of Commons.

It is the clear duty of our profession to wake up and educate public opinion, not by urging claims for special consideration or privileges, but by exploiting the existing and usual avenues for enlisting sympathy and support. That is the way in the distant dominions, and that is the only wise way in this country. Seats in the House of Commons are to be had. They will not be thrown at us. We must win them by energy and enterprise. It will be a turning point in our history when we take a deep and direct interest in the political destinies of our race. Not till then will medical science find its proper place in promoting the physical well-being of the nation.

I speak with some experience. For three years I sat in an Australian parliament and retired because I was entrusted with the task of building up out of nothing the Department of Pathology in the Sydney University. Later I took an active interest in the campaign for the federation of the Australian colonies. Later still I entered the Municipal Council of Sydney as an alderman, for the purpose of educating public opinion on the problem of tuberculosis.

I attended the meeting of the medical profession on October 1st at Steinway Hall and was shocked by the glaring lack of political *savoir faire* manifested in every line of the programme submitted to the meeting. Trammelled by traditions, habits of thought, and the exigencies of practice, our profession has eschewed political activities and thus missed many golden opportunities of influencing public opinion upon the paramount importance of medical science in national life.

To gain our ends, it is but necessary to present the case of medical science as an indispensable factor in promoting and maintaining a high standard of national health upon which all other national activities essentially depend. We must present our case in season and out of season, and slowly but surely educate public opinion to adopt our views and act upon them.

In my judgement a nondescript, conglomerate, parti-coloured committee might be an encumbrance and nuisance on the hustings. A constituency might well resent interference or dictation of this origin, and a candidate might be handicapped by such intrusion from the outside. Certainly such a committee would be ill advised to assume the invidious task of discriminating between one medical man and another. Any well-trained, honest medical man who offers himself as a candidate should need no recommendation from a medical committee in order to win a seat on his own merits and the merits of his case. Already organizations exist, and it is better to seek the assistance of these bodies, which have both money and machinery.

The one thing needful is to find medical men possessing knowledge and intelligence and some gift of expression, who are ready to sacrifice leisure, time, and energies, and appeal to the people at the *next* election. We want candidates first, not committees. The necessary local committees will spring up automatically in every constituency.

The constituency *par excellence* for medical representation is East Marylebone, and, others failing, I shall offer myself as a candidate. St. George's, Hanover Square, is another. Haggerston is another, since Mr. Chancellor has crude notions upon medical subjects. I would place national safety, unity of the British empire, reunion in sentiment of Great Britain and America, and solidarity of the allies in the cause of humanity, justice, and liberty above any fiscal shibboleth. I would fight for the universal principle that the health of the people is a nation's best asset, and medical science is the greatest factor in improving the capital value and increasing the dividends of this magnificent asset.—I am, etc.,

London, W., Oct. 4th. W. CAMAC WILKINSON, M.D.

SIR,—I shall be obliged if you will announce that in accordance with the voting of those who attended the meeting of the profession at Steinway Hall on October 1st, the following have been invited to serve on the committee appointed for the purpose of "taking such steps as may be possible to further the election of medical men to the House of Commons":

Representatives of the Royal College of Physicians, the Royal College of Surgeons, the Royal Society of Medicine, the Medical Department of the Royal Navy, the Royal Army Medical Corps, the Royal Institute of Public Health, the British Dental Association, the British Medical Association, the Incorporated Society of Medical Officers of Health, the Medical Society of London, the Medico-Political Union, the Medical Women's Federation, the National Medical Union, the Poor Law Medical Officers' Association, and the State Medical Service Association; the Editor of the BRITISH MEDICAL JOURNAL, the Editor of the *Lancet*, the Editor of the *Medical World*; Mr. Ernest Clarke, Dr. W. F. H. Coke (Ashford), Dr. R. A. Gibbons, Dr. William Hodgson (Crewe), Sir Thomas Horder, Mr. Lockhart-Mummery, Dr. Arthur Latham, Dr. R. R. W. Logan (Ashby de la Zouche), Dr. J. C. Lyth (York), Dr. H. Moreland McCrea, Dr. J. A. Macdonald (Taunton), Dr. Howard Marshall (Cirencester), Sir Henry

Morris, Bt., Dr. E. H. M. Stancomb (Southampton), Dr. Barbara Tchaykovsky, Mr. E. B. Turner, Dr. Jane Walker, Colonel A. S. Woodwark, C.M.G.

—I am, etc.,

London, W., Oct. 8th. ARTHUR LATHAM.

THE FUNCTION OF THE CARDIAC VAGUS.

SIR,—The confusion which appears to exist on the problem of inhibition is mysterious to me. It seems to depend to some extent on the use of the word in a sense foreign to that of the physiologist. Thus, when H. O. Thomas says that it is "the suspension of life," he is not speaking of the same thing as the slowing of the heart by the vagus. There is no need for a special word to mean "suspension of life." Inhibition means the diminution or stopping of some functional activity, but in such a way that the cells concerned suffer no injury, and resume their activity in a normal way as soon as the inhibiting influence ceases.

For my part I have no difficulty in admitting the development of a function for *depressing* activity. A chemical reaction going on at the ordinary temperature can be increased in rate by raising the temperature, decreased by lowering the temperature. Take the case of the heart. There is a certain rate at which it beats automatically. This rate has doubtless been developed in accordance with the average need of the organs for supply of blood. But under some conditions, as in complete bodily rest, this degree of activity would be wasteful. Hence we find a nervous control developed which slows the rate and diminishes the strength of the beat. This control is also of value when the arterial pressure rises to a dangerous height from any cause. On the other side we have the accelerator or augmentor nerves for use in increasing the rate or strength of the beat. Similar considerations apply to all cases where it is of advantage to the organism that tissues should be in a state of activity without the continuous supply of impulses from the central nervous system. These are cases where organs or tissues are always in a state of more or less activity, such as the various structures in which smooth muscle is found—arterioles, intestine, etc. The voluntary muscles are not automatically active, and stop contracting as soon as innervation ceases. The necessity for inhibition is not so obvious here, but it is nevertheless present in the nerve centres controlling these muscles. The reflex discharge of a centre, as Sherrington has shown, is apt to last longer than the stimulus exciting it, and, in order that the cell may be used for another reflex, this discharge must be stopped promptly. It is done by inhibition.

As yet we know no more and no less of the nature of inhibition than we do of that of setting into activity. But whatever the change produced in the one case may be, that in the other case must be of an opposite kind.

The experimental evidence as to the function of the vagus is so clear and unequivocal that I am astonished to see it doubted, except that it seems to be rather the fashion to attack old work. I am not aware that the brothers Weber had any particular theory about the vagus. They described an experimental fact. Although an electrical stimulus may not be an exact counterpart of the natural one, the work of Keith Lucas and his colleagues has shown that the process in a nerve is identical, however it may have been set in action. It is merely a question of the ease with which it is set going. To deny results obtained by artificial stimulation of nerves is to throw over experimental physiology and pathology altogether, not to speak of the whole practice of electrotherapeutics.

"Shock" is such a complex state, and the name is used so inaccurately, that to explain inhibition by it is to explain a simple process in terms of a more complex one. An animal under an anaesthetic is not in a state of shock. In fact, when one requires to produce this state in order to investigate it, it is found to be very difficult, and somewhat drastic procedures have to be resorted to.

As to slow working being necessarily better functioning, it is an unfortunate necessity that if a muscle is to contract powerfully it must have a certain time for recovery. It is the powerful action that involves slowness, not slowness that causes the powerful action. If the labourer's muscles were able to work as well fast as slow, he would do more work, but they are not sufficiently well constructed, if it may be allowed to say so. The heart does more work beating rapidly under adrenalin.

The remarks of Mr. Morley Roberts on the reflex functions of the vagus and accelerators are perfectly to the point, and in no contradiction to the experimental facts of artificial stimulation. The introduction of digitalis confuses the issue, because the action of this drug is so manifold, and not yet completely understood. It is incorrect to say that the heart does its work better when slowed. That is only if it has been beating abnormally fast. Are we to suppose that the vagus can only act under such conditions? But I can see no misuse of language in speaking of inhibition, even if that were so.

It is no wrong belief that such nerves exist. The evidence is beyond question. If H. O. Thomas has not met with any that convinces him, I fear that he must be convicted either of ignorance or prejudice. What he says about atropine protecting the vagus from the shock of mechanical disturbance is nonsense. Atropine prevents the action on the heart because it paralyses the structures which intervene between the nerve fibres and the heart muscle; it does not act on the vagus itself.—I am, etc.,

University College, London, Sept. 24th. W. M. BAYLISS.

CARDIAC INFECTIONS IN CHILDHOOD.

SIR,—Dr. F. J. Poynton's valuable contributions on this subject end in rather a note of doubt as to the value of present-day treatment. May I therefore be allowed to strike a more optimistic note? In my opinion rheumatism occurs only in mouth breathers—that is, in children and adults who breathe through the mouth by day and by night, or in people who do so at night only. The *preventive* treatment of rheumatism and its consequent cardiac conditions (so ably mapped out by Dr. Poynton) is therefore the prevention of mouth breathing, and enucleation of the tonsils does not always effect this. On the other hand, the *curative* treatment of rheumatism is the employment of gargles (in addition to salicylates) to strike as far as possible at the root of infection. And I venture to give the following prescription as the most satisfactory ally to the salicylates in the treatment of acute and subacute cases of rheumatism, and as the best preventive of recurrent attacks in rheumatic patients who still persist in taking in fresh infection, or stir up the old infection in the tonsils, by the vicious habit of breathing through the mouth:

℞ Acid. carbol. liq.	...	...	...	ʒ iv
Aq. chloroformi	...	...	ad	ʒ viij

Ft. garg.

Use half a teaspoonful in a glass of water as a gargle, or swab frequently in acute cases, and as a tooth-wash and gargle night and morning in case of recurring attacks.

I have got better results from this gargle alone than from the use of salicylates alone in some cases of rheumatic sciatica and lumbago, and, when combined, they have given excellent results in acute cases.—I am, etc.,

T. M. ALLISON,
B.E.F., France, Sept. 25th. Major R.A.M.C.(T.).

THE CENTRAL POOL.

SIR,—The sum due to the Central Pool could be determined with a very slight margin of error from the sale of stamps if every person entitled to medical benefit were to return a card or cards stamped for each week (Monday) for which we are "at risk" whether he were well or ill, working or not working. Besides the ordinary insurance contribution stamps, there might be "sickness relief" stamps and "arrears" stamps which would be in the hands of the approved societies and affixed by their agents in the spaces not occupied by contribution stamps. Thus each card would be entirely filled with stamps of one kind or the other, and the number of stamps *used* in the year divided by fifty-two would give the number at 9s. due to the pool. During the first year more stamps would be sold than would be used, and allowance could be made for this by withholding an estimated sum from distribution and carrying it over to the next year, but after the first year the number sold and the number used would be for practical purposes identical, and the figures could always be checked by an actual count after all the cards had come in for the year. The "arrears" and

"sickness relief" stamps might be sold to the societies at cost price, and new contribution stamps of a different colour or design would have to be issued at the beginning of the first year, for which the old stamps left over in the hands of insurers might be exchanged. The aged and disabled would have relief stamps on their cards (they might have cards for a whole year instead of a quarter), and doctors might satisfy themselves from time to time that their cards were being duly stamped, and all suspicion of a "shortage" on that head could be allayed.—I am, etc.,

Swinton, Oct. 6th. J. PRICE WILLIAMS.

SIR,—In saying that "areas whose index register is kept as accurately as possible are penalized in favour of areas where the register is kept carelessly" I did not, as Dr. Brackenbury supposes, refer to the suspense slips. Obviously it is in the interests of every area to translate these into index slips as soon as possible. What I did refer to was the index register. If any area is careless about removing the names of persons who have died, or gone out of benefit, or have got upon the register by mistake through living close to the border of the area, then I repeat that such areas gain at the expense of others where the register is more carefully kept. I know of a case where one area lost a considerable sum in this way.

Dr. Brackenbury says that if the new suggestions with regard to the sale of insurance stamps are accepted the Central Pool will, as now, contain a sum calculated at the rate of 9s. per annum for every insured person in medical benefit; and that the result will be arrived at eighteen months sooner. But he does not explain why. I may be dense, but it passes my comprehension to guess how the sale of stamps can give the slightest cue to the number of persons in benefit. There may be 52 stamps on one card, 42 on another, 32 on another, none at all on some. And a quite indefinite number may be retained in the hands of employers for future use. The best suggestion I have heard so far is that we be paid in full on the basis of the last completed year, and the slight differences settled afterwards.

By working the Act through approved societies there is endless delay and confusion, besides the unnecessary expenditure of 3s. 8d. per insured person for salaries, etc. The work could be done much better, and at a quarter the cost, by the Insurance Committees; and if a central clearing house were established the registers would cease to be inflated, and panel practitioners would have the satisfaction of being paid on a count that was admittedly correct. This is a matter we ought to urge upon the Government when the Act comes up for revision and extension.—I am, etc.,

North Shields, Oct. 7th. F. C. MEARS.

THE FUTURE OF THE MEDICAL PROFESSION.

SIR,—In my letter of September 28th the words "Imperial Medical Council" seem to have given rise to some misapprehension. May I at once explain that only a *temporary and consultative body* is suggested? The word "conference" would have been better. Such a conference would in no way limit the future liberty of action of the countries taking part in it. It would merely ensure that, in grappling with so vital a matter as the relations of medicine to the State, England would have the considered views of the whole empire; also that the whole empire would have the opportunity of expressing its considered views on legislation, which, inaugurated to-day in England, will to-morrow form a precedent, splendid or disastrous.

There is, I understand, a movement on foot to bring about a "fraternity of medicine among English-speaking peoples." Could such a fraternity begin more suitably than with a conference which may determine the future well-being of all?—I am, etc.,

Exeter, Oct. 7th. W. GORDON.

REMUNERATION OF RURAL PRACTICE.

SIR,—I hope all rural Panel Committees will strongly oppose a uniform capitation grant at the forthcoming congress unless they receive a definite promise from the Government that their claims for mileage will be met by an adequate grant.

The present grant is irritatingly small, and fails absolutely to satisfy the vast majority of country practitioners.—I am, etc.,

Alderton, Oct. 7th. T. CUMING ASKIN.

RANK IN THE R.A.M.C.

SIR,—In the BRITISH MEDICAL JOURNAL of August 3rd (p. 123) Dr. Eales laments that practitioners of over fifteen years' standing are obliged to enter the R.A.M.C. as lieutenants because they may have to act under a junior man who has a captaincy. Some of us have been in the army for years, had over fifteen years' experience when we started, and were lieutenants for a year. Why, in the name of all that is fair, should men who are forced to join up now grouse because they must serve under the same conditions as men who volunteered two, three, or four years ago?

I am a middle-aged practitioner myself, but my experience is that stereotyped elderly practitioners, coming new into army routine in the fifth year of war, do not make the best medical officers, even in base units. I can assure your correspondent that quite as good medical work can be done with two pips up as three; for the rest, it is pure snobbery.—I am, etc.,

F. M. GARDNER MEDWIN,
Egypt, Sept. 9th. Captain R.A.M.C.

Obituary.

ROBERT DONALD KEITH, M.A., M.D.ABERD.

THE death of Dr. Robert Donald Keith, Principal of King Edward VII Medical School, Singapore, at the early age of 41, will cause great sorrow in the Straits Settlements, where during the last ten years he had raised himself to a high position of professional skill. Dr. Keith, who was a brother of Professor Arthur Keith of the Royal College of Surgeons of England, was born at Turriff, N.B., and was educated at the Grammar School and University of Aberdeen, passing through the Arts as well as the medical curriculum, which he did with honours. He was subsequently elected a Carnegie Fellow, and studied in Leipzig, Tübingen, and London, devoting himself especially to pathology and bacteriology. Although he had originality and a fine scientific judgement, his inclinations were towards medical practice. At the early age of 30 he was appointed teacher of anatomy and physiology in the medical school at Singapore, and soon became its Principal. He also held the post of consulting physician to the Tan Tock Seng Hospital, and later was lecturer on clinical medicine. He devoted himself heart and soul to the work of elevating the medical standards among the natives and had the satisfaction at the end of ten years to see his efforts crowned with success. At the outbreak of the war he commanded the Singapore Field Ambulance Company and had charge of the Military Hospital. During the serious mutiny in Singapore he took an active part in the protection of the lives of the Europeans. All these manifold activities told on a constitution which had been enfeebled by systematic overwork and a tropical climate, and he arrived home two years ago in a serious state of health. After an operation improvement took place, and he was able during some months to hold an important appointment in a military hospital, but ultimately got rapidly worse and died on October 2nd, after months of acute suffering which he bore with uncommon courage. In the intervals of pain he was able to complete a small but important work on *Clinical Case Taking*, reviewed in our columns on August 24th. Dr. Keith was married and has left three boys. He was a man of most simple character, trusting and sincere, and he conducted all the intercourses of life with the greatest openness and with a loyalty which made him respected wherever he went.

SIR DOYLE MONEY SHAW, K.C.B., Inspector-General of Hospitals and Fleets, Royal Navy (retired), died in London on September 30th, aged 87. He was born in 1830, the fifth son of Surgeon David Shaw, H.E.I.C.S., educated at Edinburgh Academy and University, and took the L.R.C.S.Edin. in 1854. Entering the navy in the same year as assistant surgeon, he attained the rank of inspector-

general on May 7th, 1888, and retired in 1892. He had a long list of war services. He served in the Crimean war at Eupatoria, in H.M.S. *Spiteful* at the bombardment of Kimburn and at the capture of Sebastopol, receiving the Crimean medal, with the clasp for Sebastopol, and the Turkish war medal. He next served with the marines in China, from 1857 to 1861, when he was present at the capture of Canton, the Taku forts, and Peking, at the unsuccessful attack on the Peiho forts, and in the actions of Sinho, Tongku, Chanchiawan, and Palikao, gaining the China medal with three clasps, being promoted to staff surgeon, and mentioned in dispatches. In the Abyssinian war of 1868 he was senior medical officer of H.M.S. *Octavia*, the flagship, and received the medal. In the Egyptian war of 1882 he served in the flagship, H.M.S. *Alexandra*, at the bombardment of the forts of Alexandria, when he got the medal with a clasp, the Khedive's bronze star, and the C.B. He subsequently filled the posts of deputy-inspector-general at Plymouth hospital from 1884 to 1886, and at Malta from 1886 to 1888, and of inspector-general at Haslar from 1888 till his retirement in 1892. He was created K.C.B. at the Coronation in 1911.

THE LATE DEVEREUX MARSHALL.—A Fleet Surgeon writes: The death of Staff Surgeon Marshall, R.N.V.R., will bring a feeling of bereavement to his former messmates. In my twenty or more years in the navy I have never met any man who so completely won the esteem and the really genuine affection of every one in his ship. It was to Marshall that we naturally turned when down on our luck. The depth and genuineness of his religious convictions influenced his whole life; he was a tender-hearted doctor; he loved his life at sea; he was father and mother to every youngster on board, and he had a very real influence on all who knew him. On that ghastly night following the landing at Gallipoli, he heard that an attempt was to be made to evacuate the wounded from the *River Clyde*. She was, at the time, under musketry fire from both sides, and the noise of it was not comforting, but though he had been at work continuously for eighteen hours and was quite exhausted he at once volunteered to go—and went.

Universities and Colleges.

UNIVERSITY OF LONDON.

THE following awards have been made:

St. Mary's Hospital Medical School. — University Scholarship: Mr. R. Y. Paton (£52 10s). Open Scholarships: Mr. R. M. Fry (£100), Mr. D. Levi (£50). Palmer Scholarships: Mr. R. W. Scarff (£25). Epsom Scholarship: Mr. J. A. Walker (£52 10s.).

University College Hospital Medical School.—The two Goldsmid Entrance Exhibitions have been awarded to Mr. H. Spibey and Miss J. K. Gatty.

London Hospital Medical College.—The "Price" and Entrance Scholarships in Science (£100 and £50) have been divided between Messrs. G. N. Golden, J. H. Andre, and K. W. Todd.

UNIVERSITY OF GLASGOW.

THE following degrees were conferred on October 7th:

M.B., CH.B. — *J. Nicol, †Elizabeth C. Loudon, †A. S. Strachan, †R. P. Smith, W. J. S. Cameron, A. C. Connoll, J. S. McL. Grey, Janet W. Hepburn, H. J. Hollis, J. P. Kilty, P. McDiarmid, Mary J. Macdonald, Maud E. D. Mackinnon, A. W. McRorie, Margaret G. McVey, I. L. Oluwole, Vida J. Perry, Marjory M. Scanlan, J. C. Vaughan, H. Wands, W. Young.

The Brunton Memorial Prize of £10, awarded to the most distinguished graduate in Medicine of the year, has been divided between Mr. J. Nicol and Mr. J. G. Harrower.

* With honours. † With commendation.

DR. JOHN DAVID WALTHER of St. Leonards left £34,226; Dr. C. E. Glascott, for thirty-five years honorary surgeon to the Royal Eye Hospital, Manchester, £18,621; Dr. Richard Walter Owen Withers of Weston Rhyn, Salop, £18,200; Mr. H. Betham Robinson, senior surgeon to St. Thomas's Hospital, £11,195; Dr. Frederick Roberts, £10,374; and Dr. H. Macnaughton-Jones £5,971.

THE Council of National Defence of the United States has enlarged the scope of the Volunteer Medical Service Corps, making eligible for it all practitioners, including women, holding a degree in medicine from a legally chartered medical school, provided that he or she is not already commissioned in the Government service. It is estimated that more than 60 per cent. of medical practitioners will be required to remain at home continuing their ordinary professional work and caring for industrial workers.

Medical News.

A MEETING of the medical profession of the Home Counties has been arranged by the Metropolitan Counties Branch of the British Medical Association, to be held in the Toplady Hall (Whitefield's), Tottenham Court Road, on Tuesday next, October 15th, at 4 o'clock, when a discussion on the proposed Ministry of Health in its relation to the health of the people and the future of the medical profession will be opened by Dr. M. G. Biggs, president of the Branch, Major-General Sir Bertrand Dawson, G.C.V.O., and Dr. H. B. Brackenbury. At the close of the discussion resolutions, the terms of which were printed in the SUPPLEMENT last week, will be submitted to the meeting. It is hoped that all medical men and women will make an effort to attend.

THE annual general meeting of the Auxiliary Royal Army Medical Corps Funds will be held at 11, Chandos Street, W.1, on Friday, October 25th, at 4 p.m.

THE Royal Sanitary Institute will hold a discussion at the College of Technology, Manchester, on October 18th, at 6.30 p.m., on welfare work in factories and workshops, under the chairmanship of Dr. Philip Boobbyer, M.O.H. Nottingham.

THE Ingleby Lectures for 1918 before the University of Birmingham will be given by Dr. Peter Thompson, Professor of Anatomy in the University, on Thursdays, October 17th and 24th, at 4 p.m. The subject is "Some problems in embryology."

DR. MAGNAN, the distinguished French psychiatrist, left £1,000 to the Paris Academy of Medicine, to be applied to the foundation of a triennial prize for the best work on mental medicine.

THE annual meeting of the National Association of Insurance Committees will be held at the house of the Hearts of Oak Benefit Society, London, on Thursday and Friday next. Papers will be read, and a number of motions will be submitted by the executive council. One of them expresses the hope that substantial agreement may be obtained by the Ministry of Reconstruction in regard to the establishment of a Ministry of Health, and calls for immediate introduction of a bill as an urgent war measure. Another deplores the unsatisfactory housing conditions from which many tuberculous cases are taken to sanatoriums and to which they return. Still another motion favours the inclusion of maternity services within the range of medical benefit.

THREE Chadwick Lectures, illustrated by the epidiascope, on "The Story of a New Disease," are being delivered by Dr. F. G. Crookshank, at 5 p.m., on Thursdays, October 10th, 17th, and 24th, at the rooms of the Medical Society of London, Chandos Street, Cavendish Square, W.1. The first lecture dealt with (*a*) Chadwick and the study of epidemiology, (*b*) The Heine-Medin conception and synthesis, (*c*) Some Early English and Continental epidemics; Dr. W. H. Hamer took the chair. The second lecture will deal with (*a*) The "nervous feavour" of Thomas Wellis, (*b*) Spinal typhoid, (*c*) Epidemic encephalitis; Sir Richard Douglas Powell will take the chair. The third lecture will deal with (*a*) Raphania, (*b*) Botulism, (*c*) The theory of the Heine-Medin disease; Sir William J. Collins will take the chair.

THE Local Government Board in a leaflet dated October 2nd states that cases have occurred in which applications for the grant of exemption to a duly qualified medical practitioner have been made to the ordinary tribunals. Local and appeal tribunals are reminded that such applications must be made direct to the Medical Tribunal for England and Wales, at 429, Strand, W.C.2, specially appointed for the purpose; and if an application is made to an ordinary tribunal, it should be returned to the applicant with an explanation. Each practitioner is notified by the Ministry of National Service when his case comes under consideration as to the time within which an application for exemption may be made, and the application cannot be lodged until the notification has been received. A special form of application has been prepared for the use of medical practitioners which may be obtained by them from the Medical Tribunal at 429, Strand, W.C.2.

AN exhibition to illustrate women's work in war time was opened at the Whitechapel Art Gallery on October 9th. It has been arranged by the Women's Work Subcommittee of the Imperial War Museum, and we understand that some of the exhibits, notably a number of personal memorials of the late Dr. Elsie Inglis, are likely to find

a permanent place in that collection. Every phase of women's work is represented, including munition making and aircraft construction, but the work of the military hospitals and dressing stations occupies the major space and is illustrated chiefly by photographs and by small plaster models, extremely well executed, as well as by a display of the decorations which are open to women in the nursing services. The industrial exhibits include various kinds of protective garments for women engaged upon work which is dangerous either on account of machinery or the nature of the substances with which they have to deal.

AT a meeting held at the Mansion House, London, three months ago, a London Memorial Fund was inaugurated for the purpose of establishing a chair of medicine in the University of Belgrade in memory of the late Dr. Elsie Inglis. The Serbian Minister of Education, M. Trifounovitch, recently said, addressing the Committee of the London Units of the Scottish Women's Hospitals: "Ladies, your friendship is, believe me, a great support in our advance towards our goal, towards the victory of Right, which will enable us to unite, to return to our ruined homes and to develop in peace, for we are a peace-loving people." It is hoped that the Fund may be complete by the time the victorious Serbs re-enter their capital, Belgrade. Of the £12,000 needed, more than £2,500 have been promised or subscribed. Further contributions should be sent to the Elsie Inglis London Memorial Fund, 66, Victoria Street, London, S.W.1. The joint treasurers are the Countess of Selborne and Miss Teresa Gosse.

THE opening meeting of the thirty-seventh session of the West London Medico-Chirurgical Society was held at the West London Hospital on October 4th, when the retiring president, Dr. A. J. Rice-Oxley, inducted his successor, Lieutenant-Colonel E. M. Wilson, C.B., C.M.G., D.S.O., R.A.M.C., who presented to Dr. Rice-Oxley the Keetley Memorial Medal, and expressed the appreciation of the society for his work during the past session. Lieutenant-Colonel E. M. Wilson then delivered the presidential address on Ancient Physic. Beginning with trephining in the Stone Age, "to allow the escape of the evil spirit," he traced the development of medical art through the Chaldean and Egyptian epochs. Owing to the prohibition of the study of anatomy at this era, clinical knowledge made greater advances than surgical methods. It was doubtful whether Egyptian surgeons removed cataracts, although they probably operated for pterygium and pannus, whilst prescriptions for eye lotions and salves were frequent. The rudiments of public health were discoverable in the Mosaic Law, the connexion between mice and plague being indicated. Chinese and Indian medicine were then reviewed, the Hindus claiming that Hippocrates derived his knowledge from India. The change from superstition to rationalism was initiated by Pythagoras into Greek medicine. A vote of thanks to the president for his address was proposed by Major McAdam Eccles, seconded by Dr. Clippingdale, and carried by acclamation.

Letters, Notes, and Answers.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

The postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2631, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra, Westrand, London*; telephone, 2634, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin.

The address of the Central Medical War Committee for England and Wales is 429, Strand, London, W.C.2; that of the Reference Committee of the Royal Colleges in London is the Examination Hall, 8, Queen Square, Bloomsbury, W.C.1; and that of the Scottish Medical Service Emergency Committee is Royal College of Physicians, Edinburgh.

QUERIES AND ANSWERS.

CAPTAIN HARVEY BAIRD, M.D., R.A.M.C. (Ham Common), writes: With reference to the inquiry of "Hexamine" as to 10-grain doses of urotropin thrice daily harming the kidneys, I may say that in studying the effect of the drug in general paralysis I gave those doses for long periods to many paralytics, and have never observed any bad effects. My observations were published in the *Journal of Mental Science*, January, 1913. In this hospital I have given hexamine 10 gr., thrice daily, in several cases with benefit.

DR. PERCY NEWELL (Margate) writes: In reply to "Custos" (BRITISH MEDICAL JOURNAL, October 5th, 1918), a 5 per cent. solution of aluminium acetate is surely too strong for burns. Usually a 1 per cent. solution is used. This is made by adding a drachm of the liq. alumin. acet. of the German Pharmacopoeia (which is 7½ per cent.) to an ounce of water. It is said there is no danger of poisoning from its use, but after some weeks it causes a ligneous hardness of the tissues. Twenty-four hours' immersion in normal saline solution largely removes this.

LETTERS, NOTES, ETC.

THE EXERCISE BLOOD PRESSURE TEST OF MYOCARDIAL EFFICIENCY.—*A Correction.*

DR. GORDON LAMBERT calls attention to an error in the line explaining the signs used in the charts illustrating his paper on this subject published in the JOURNAL of October 5th (p. 367). The sign at B indicates the *pulse*—not the diastolic pressure, which is indicated by the sign at C.

A1 AND C3.

DR. BINNIE DUNLOP (London) writes: The Prime Minister well said the other day that we cannot have an A1 empire on a C3 population. Then why aim at reproducing the race mainly from the C3 population? Why ignore that the survival rate (excess of birth over death rate) is limited by the food or trade rate, and that even in the prosperous years before the war it was only about 10 per 1,000 per annum? Alas! few people realize, as Sir James Barr seems to do, that most of the current reform proposals are strongly in the direction of taxing the A and B population to extinction—the population which has maintained the independence and prosperity of the medical profession—in order to enable the least fit C population to bring up families under better conditions. Fortunately for the race, however, there is at least a rapidly growing appreciation, on the part of those who work among the poor, of the direct benefits to women and children of a spacing out of births.

V.A.D. MEDICAL OFFICERS.

"V.A.D. MEDICAL OFFICER" writes to call attention to the lack of recognition of the valuable and arduous services given by medical officers to voluntary aid hospitals for wounded soldiers, and suggests that the British Medical Association should bring this matter to the notice of the war authorities. Our correspondent maintains that every medical officer of an auxiliary hospital should receive recognition according to his length of service, whether paid or unpaid, but voluntary work for a year or longer should be taken into special account. He deprecates the system of giving invidious distinctions to a few only of the many who have loyally performed these duties. In his opinion it is most unjust that while nearly every other war worker has received some sort of badge, the great majority of those who have undertaken the responsible and trying work of treating the wounded in the auxiliary hospitals should be left out in the cold.

LIQUOR CRESOL SAPONATUS (LYSOL, ETC.).

MR. SYDNEY DUNSTAN, F.C.S. (pharmacist to the Royal Victoria Infirmary, Newcastle-upon-Tyne), sends the following formula for making liquor cresol saponatus, which he devised and has had in use for over six years:

Cresol	50
Linseed oil	25
Caustic soda	q.s.
Distilled water to	100

He finds that this solution if properly made works very satisfactorily, both from a pharmaceutical and bacteriological point of view. The advantage is that soda is used in place of potash; the cost of the former is 1s. per lb., while that of the latter is 14s. The cost of the liquor in the *British Pharmacopoeia*, 1914, is, he states, approximately 12s. a gallon, and the revised formula published in the *London Gazette* of March 29th, in which linseed oil is used in place of castor oil, a little less. The cost of the formula he gives is 3s. 3d. a gallon. Another great advantage, he adds, is that potash is controlled and difficult to obtain, whereas the soda is not controlled and fairly plentiful.

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Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Wednesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.